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THESIS

FACULTY WORKLOAD DATABASE SYSTEM (FWDS)
for the ADMINISTRATIVE SCIENCES DEPARTMENT:
ANALYSIS, DESIGN, and IMPLEMENTATION

by

Robert A. Zellmann

September 1992

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Co-Advisor:	Reuben T. Harris

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The Administrative Sciences (AS) Department of the Naval Postgraduate School (NPS) has a very large database containing information regarding faculty activity in the areas of course instruction; thesis development, ongoing research, and academic service. Management of this information was disjointed and required considerable time and energy, and could be more efficiently handled with a software application. Subsequently, the choice was made to develop a database application that effectively manages these facets of the AS Department faculty workload. This thesis develops and implements the Faculty Workload Database System (FWDS) to support the AS Department. This thesis provides an in-depth discussion of the entire software application analysis, design, and implementation process. The system was produced using dBase IV, version 1.1 and will transition to operational status during FY 93.

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for the Administrative Sciences Department:
Analysis, Design, and Implementation

by

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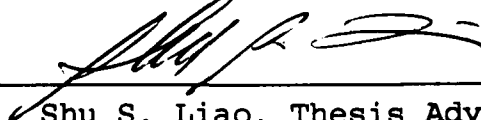MASTER OF SCIENCE IN INFORMATION SYSTEMS

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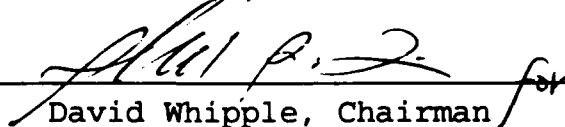September 1992

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ABSTRACT

The Administrative Sciences (AS) Department of the Naval Postgraduate School (NPS) has a very large database containing information regarding faculty activity in the areas of course instruction; thesis development, ongoing research, and academic service. Management of this information was disjointed and required considerable time and energy, and could be more efficiently handled with a software application. Subsequently, the choice was made to develop a database application that effectively manages these facets of the AS Department faculty workload. This thesis develops and implements the Faculty Workload Database System (FWDS) to support the AS Department. This thesis provides an in-depth discussion of the entire software application analysis, design and implementation process. The system was produced using dBASE IV, version 1.1 and will transition to operational status during FY 93.

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I. INTRODUCTION

A. BACKGROUND

The Administrative Sciences (AS) Department of the Naval Postgraduate School has a very large database containing information on faculty workloads. Management of this information was disjointed and manpower intensive and could be more efficiently handled with a software application. To improve the efficiency in information management a decision was made to develop a database application that effectively manages the essential facets of the AS Department faculty workload.

The basic requirement for the application is to process all of the faculty workload information with regard to accomplishment of course instruction, thesis development, ongoing research, and academic service assignments. Additionally, to achieve optimum performance and utilization the system was required to use a relational database architecture and menu driven processing controls.

B. FWDS VERSION 1.0

The objective of the Faculty Workload Database System (FWDS) is to enhance the ability of the Administrative Sciences Department to manage and record the completion of a myriad of faculty activities. To achieve this goal, numerous

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detailed descriptions concerning all aspects of the present recordkeeping systems for faculty involvement in course instruction, thesis development, research work, and academic service had to be thoroughly analyzed. This analysis lead to the identification of unique attributes for each activity area. As FWDS uses a relational database hierarchy, it was critical to ensure that all common fields used to link the required objects and subsequently form relations, were exactly identical in both name and structure.

FWDS was developed using Ashton-Tate's (now Borland) dBase IV, version 1.1. Numerous interviews were conducted with the system end-user and the administrative personnel presently responsible for maintaining the individual activity area records. Desired end-user requirements were identified and then used to develop a prototype or "first version" FWDS application that was presented to the expected system user for review and discussion. Development of the FWDS involved the employment of complex program coding associated with the dBase IV programming language as well as intensive use of the dBase IV application generator tools and techniques.

The system provides record entry for various fields as discussed in Appendix E, (the FWDS User's Guide) and the requisite update functions associated with every record in each of the faculty activity areas. Also, the system allows for the selection and generation of fifteen different reports

from the information in the faculty, course, thesis, research and service databases.

The FWDS is a user friendly application that employs easy to read screen formats, preformatted data entry techniques and menu-driven processing controls. The Faculty Workload Database System, due to its modular structure and relational hierarchy, provides for the possibility of future expansion as additional requirements and applications become identified.

C. THESIS STRUCTURE

The following briefly summarizes the remaining structure and content of this thesis.

Chapter II details the Definition Phase used during the process of developing FWDS. The system objectives and the techniques for accomplishment of these objectives is the focus of the discussion. Project scope and feasibility are determined during this phase.

Chapter III discusses the Requirements Phase of the system development cycle, and specifies the exact functionality of FWDS necessary to meet the objectives defined in Chapter II. Object definition through diagram and specification (see Appendix A), and the system dataflow diagram are associated with this phase.

Chapter IV briefly describes the evaluation process required when considering application development alternatives. Development approach, programming language and

Database Management System (DBMS) selected for the Faculty Workload Database System were chosen in a straight forward manner.

Chapter V addresses the Designing Phase of FWDS. The specific architecture of the system and the necessary database views or schema are determined. This phase delineates the database schema, application subschemas, report formats, and necessary process control menus. Appendices B through D provide illustrations of the FWDS Relational Diagrams, Relation Definitions, Data Dictionary, and FWDS Logic (pseudocode) determined during the Design Phase.

Chapter VI outlines the Implementation Phase of the FWDS development cycle. At this stage, the system has been developed in accordance with the processes and techniques from the Design Phase. Testing of each component and the complete system as been conducted and installation of the system followed by an end-user review will occur.

Chapter VII provides some concluding remarks for the FWDS development discussion, highlights possibilities for additional thesis study associated with FWDS enhancements, and presents the FWDS User's Guide, (Appendix E).

II. SYSTEM DEFINITION PHASE

A. METHODOLOGY

The primary objective of the definition phase is to determine the scope of the project. In many instances this includes forming a team to investigate or assess the feasibility (cost, technical and schedule) of the desired project. For this project the investigation was conducted by a single person (the author).

B. SCOPE OF APPLICATION

The purpose of this project was to develop a Faculty Workload Database System for use by the Administrative Sciences Department to effectively manage the information associated with faculty activities. Through discussions with the primary thesis advisor, it was decided that the scope of this project could successfully be accomplished as part of an individual thesis effort. All associated project feasibility concerns were satisfied during the preliminary discussions. Development of the FWDS application was performed on a 386, 16 MHZ IBM compatible personal computer owned by the author. For schedule feasibility, a period for development from January 1992 to September 1992 was considered achievable.

The system scope and functionality objectives were determined following a series of personal interviews with

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professors of the AS department. The initial interview was conducted with Professor Shu Liao, Associate Chair for Systems Development. Broad functional objectives (relational hierarchy database and menu driven processing controls) were determined at this meeting. The next interview was held with Professor Liao and Professor Reuben Harris, Associate Chair for Instruction. Specific functionality and system requirements were discussed. Additional interviews with both Professor Liao and Professor Harris and department assistants, were conducted as required for clarification of existing procedures. The following FWDS application definition was derived for development and implementation:

> A Faculty Workload Database System, using a relational hierarchy database structure and menu-driven processing controls, that efficiently manages a variety of information associated with faculty activity. Specifically, the system will provide recordkeeping, editing and report generation capabilities for information associated with the faculty activities of course instruction, thesis development, research work and academic service assignments.

Definition of the Faculty Workload Database System application completed the definition phase and efforts moved into the requirements phase.

III. REQUIREMENTS DEFINITION PHASE

A. METHODOLOGY

Identifying the information needed by the system user is the goal of the requirements phase. This is accomplished by providing access to the data through the creation of objects, which capture the desired information. Requirements are the building plans used to design and implement the new system. It is essential that the developer understands in detail what the system is supposed to attain. Proper definition of system objects (requirements) eases development, increases system usage, and can prevent future maintenance problems. There are two steps to perform system requirement definition.

In the first step, the developer, through interviews with the end-user, defines the objects for the application. An object is a collection of properties that describe real world events or entities that the system user utilizes in the work environment. An object instance is an example of a specific object.

The second step is to determine what functions each component of the application will perform on the database. The best method to identify the required functions is through interviews with the system user. Following the interviews a

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prototype may be built and demonstrated to assist the user in providing additional design input.

B. APPLICATION

Interviews commenced in the third week of January 1992 with Professor Shu Liao, Associate Chair for System Development and Thesis Advisor, and Professor Reuben Harris, Associate Chair for Instruction, Thesis Co-Advisor, and system user. The interviews were detailed and carefully recorded to ensure that end user needs and expectations were accurately identified. These needs could then be translated into database requirements. This cycle was repeated on numerous occasions as required to ensure a complete and satisfactory system would be developed. The time schedule for system development allowed sufficient leeway to accommodate the modifications to the original design.

C. DATA REQUIREMENTS

Each object of the application has a name that identifies it as separate from the other objects. The object names have a direct correlation with the real world entity or event that the object represents. Appendix A provides the objects for the Faculty Workload Database System (FWDS) application. Specifically, the FACULTY MEMBER object, the THESIS object, the SERVICE object, the COURSE object, and the RESEARCH object were all determined following the requirements interviews.

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The diagrams in Appendix A graphically illustrate the real world properties associated with each object and the definitions of each property (section B, Appendix A). The relationships between the objects are illustrated in Appendix B for the entire application. The attributes of each relationship and its definition within the FWDS application are presented in Section B of Appendix B.

D. CONTROL MECHANISMS

Data Flow Diagrams (DFD) were used to determine the control mechanisms required for use in the FWDS application. Figure 3.1, shows a context data flow diagram and provides a graphic model of the FWDS application which was used as an aid in the design. The goal of the diagram is to capture the inputs, outputs and functions of the system. All of the processes and information associated with the FWDS, (course data, thesis data, research data, and service data) are represented. The DFD is comprised of four elements: the data flow, represented by an arrow; the process, represented by a circle; the data store, represented by the cylinder, and the source/sink, represented by the closed box.

As shown in Figure 3.1, the ADD DATA process requires the input of new faculty, course, thesis, research, or service data. The process will add the record to the FWDS database and store the information in the appropriate file.
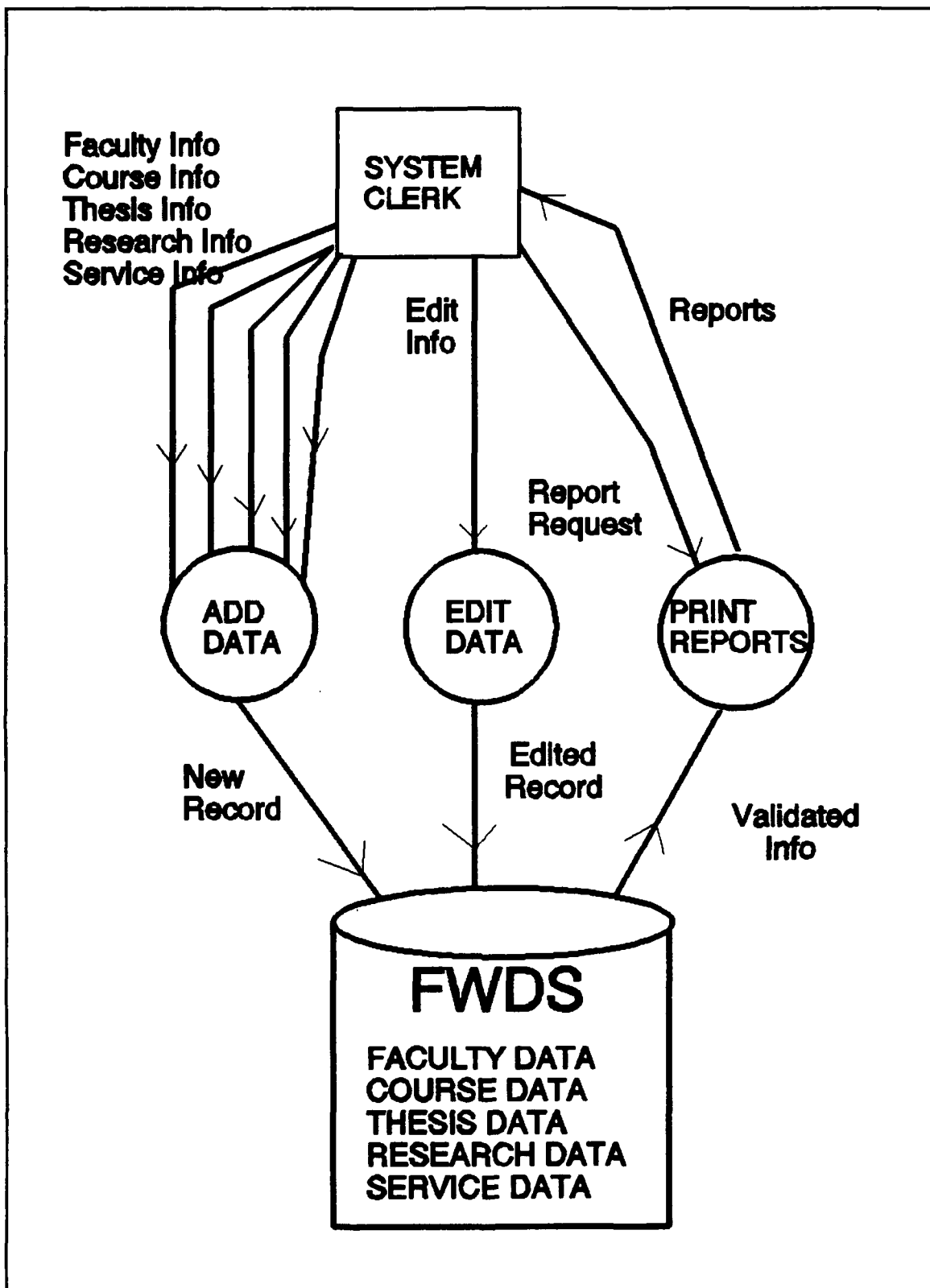
Figure 3.1   Data Flow Diagram

The EDIT DATA process requires the entry of a valid text string. The process then searches the appropriate data files and retrieves that record for manipulation or deletion. The edited record will then be stored in the file replacing the original record.

The final process is utilized to produce the desired report(s). Upon receiving a report request, the PRINT REPORTS process will retrieve the relevant report data from the appropriate data files and generate any of the fifteen available reports. Table 10, Appendix C, summarizes the available reports.

E. USER REVIEW

The last stage of the requirements phase was meetings with Professor Liao and Professor Harris to review the planned reports, to be generated by FWDS, for accuracy and completeness. The reviews lasted about 30 minutes each, requiring rework of a few reports and the creation of one additional report. After this review the requirements phase was complete.

IV. SYSTEM ARCHITECTURE EVALUATION PHASE

A. METHODOLOGY

Based upon the information gathered in the requirements phase, the evaluation phase typically reviews several items of concern for the developer and the system end user.

The first topic to be considered is the choice of application design. Has the developer chosen the optimum system architecture for the user's needs? Are there alternative approaches to consider? Are the system architecture alternatives affordable? Typically, the end user's cost constraints will drive the decision to accept a specific system architecture.

Next, the feasibility of the entire development effort should be evaluated from an effort, schedule, and cost perspective. Now that the design and requirements phases are complete, the user and developer have a better level of information upon which to reevaluate their previous decision. Can the new application be developed with the resources on hand? Additional time and resources should not be spent on a system that will not reach completion. The realities of the funding process (at least in government and large corporations), have caused many systems to be abandoned or restructured after initial investment.

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Lastly, the user requirements are reviewed to ensure that they fall within the original scope of the system being developed. Time for system development plays a key role in this decision. If all of the system requirements cannot be accomplished in the initial version of the application, a prioritization must be developed. Other requirements may need to be deferred until a later development effort due to the time and resources (cost) needed to provide the desired capability.

B. APPROACH

The evaluation phase during development of the Faculty Workload Database System (FWDS) was simplified by a solid understanding of the planned system architecture and the user requirements. The choice to develop FWDS using dBase IV as a database language was based upon availability of the software (to the developer and the user) and the anticipated ease of integration into the existing software environment at the Naval Postgraduate School. The hardware for the system was also a straight forward decision, as the application was required to operate on a IBM compatible 386/486 PC, located within the Administrative Sciences Department.

Following the above methodology, it became evident that the proposed system could be developed within cost, resource and scheduling constraints. Feasibility of developing FWDS was considered not to be a concern. The scope of FWDS and the

estimated time for system development and implementation was evaluated as being within the capabilities and resources of a single thesis student.

V. SYSTEM DESIGN PHASE

A. DATABASE DESIGN

In database design the initial information gathered in the requirements phase will be developed into a set of plans for the database structure. The system requirements determine "what" is to be accomplished, the database design will determine "how" the user needs are accomplished. Database designs are developed from object diagrams and object definitions which include relation diagrams and the constraints on the relationships.

Five objects involved in the Faculty Workload Database System (FWDS) application are illustrated in Appendix A and the database design that support those objects is illustrated in the relational diagrams displayed in Appendix B. The five relations are named for each object (FACULTY, COURSE, THESIS, RESEARCH, and SERVICE). The underlined attributes (L_NAME+F_NAME, C_NUM, T_TITLE, JON, and SERVICE_NAME) represent the primary keys in the relation. A key is an attribute that functionally determines the non-key attributes. The FACULTY relation is related to the COURSE relation, THESIS relation, RESEARCH relation, and the SERVICE relation in one-to-many relationships. The "split" at the COURSE, THESIS, RESEARCH, and SERVICE ends of the relationships means that

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there are potentially many of those objects associated with each faculty member. The absence of the "split" indicates that there is only one faculty member associated with the record for a specific course, thesis, research or service. The bar on the end of the line indicates a mandatory relationship between the object and the record, and the circle represents an optional relationship. For example, a specific COURSE must have an associated FACULTY member, while a FACULTY member may or may not have a relationship with the specific course.

The relational database model is based on the concept that data is stored in two-dimensional tables called relations. Each row in the table represents a record. Each column represents a field. The entire relation is classified as a file. A row is also called a tuple and a column is also called an attribute [Ref. 1]. The relational capabilities within dBase IV allows the linking or relating of these separate files or relations through the use of a common field. The common link between all of the FWDS relations is the combination of the fields L_NAME+F_NAME.

B. NORMALIZATION

When designing relations from object diagrams a process called "Normalization" is used to prevent the introduction of anomalies to the database. Anomalies are weaknesses and flaws among the relations that cause problems upon modifying the

database. Types of modification anomalies include deletion and insertion anomalies. Deletion anomalies pertain to problems that occur when the deletion of facts from one relation causes the undesired deletion of facts about another relation. Insertion anomalies describe the loss of ability to insert information about one relation until facts from another relation are received. Optimum database design attempts to minimize these types of anomalies through use of the normalization process.

The normalization process consists of testing the relation along a series of "normal forms". The term normal form refers to the class of the relation and the techniques available for prevention of anomalies. There are seven normal forms, the highest level is called Domain Key Normal Form (DK/NF). When a relation satisfies the requirements to be labeled DK/NF it is certain to have no anomalies. Due to a relation's particular structure, it may fall in any one of the seven normal forms. The seven normal forms are briefly described below along with the determination of which forms the FWDS relation FACULTY satisfies.

1. First Normal Form

The single requirement required to satisfy this form is that the relation have no repeating groups. The FACULTY relation satisfies this requirement.

2. Second Normal Form

All non-key attributes of a relation must depend on the entire key of the relation. The attributes of a record within the FACULTY relation fully depend upon the combined key of L_NAME+F_NAME, which fulfills the requirements for this form.

3. Third Normal Form

The relation must be in second normal form and have no transitive dependencies. No apparent transitive dependencies have been detected with the FACULTY relation and it is assumed that it satisfies this normal form.

4. Boyce-Codd Normal Form

A relation is in this normal form if every determinant of the relation is a candidate key. This form is difficult to achieve in reality. The FACULTY relation does not satisfy the Boyce-Codd normal form, a deletion anomaly exists within the database structure. If a faculty member record is deleted from the database all of the associated details will be lost. However, to split each of the faculty member's record attributes into a separate relation was not considered feasible. In practicality, once a faculty member record has been entered into FWDS it will not be deleted as the information will be retained for historical purposes, thus avoiding the deletion anomaly.

5. Fourth Normal Form

Fourth normal form describes the relation that has no multivalued dependencies and has satisfied the Boyce-Codd normal form. In general, a multivalued dependency exists when there are at least three attributes in a relation, at least one of them is multivalued, and the values of two attributes depend only on the other attribute. For example, FACULTY leads to multiple values of COURSE and THESIS, and COURSE and THESIS are independent of each other as relations. Once a relation fails to satisfy a previous form, it cannot satisfy any subsequent normal forms.

6. Fifth Normal Form

Fifth normal form concerns anomalies that are obscure. it concerns the division of relations into subrelations and the inability to reconstruct them as whole relations. The investigation of the obscure anomalies lead to the development of the last and highest normal form DK/NF.

7. Domain Key Normal Form

As mentioned earlier, this is the final normal form. Upon having achieved this form all possibility of relation modification anomalies occurring is removed. A relation is in the DK/NF if every constraint on the relation is a logical consequence of the definition of the keys and domains [Ref 1:p. 149].

C. FWDS APPLICATION DESIGN

The next step in the development process is to transfer the logical database design into a physical model using the programming tools associated with dBase IV version 1.1. The constraints of the programming language were incorporated into the design. For example, maximum field name length of 10 characters, using one of six available data types, and the maximum number of fields for a single record.

1. Menu Design

The first step in designing the FWDS application was to decide if the control process was to use a command line or menu driven approach. The user requirements from the earliest conversations outlined the desire for menu driven controls. As the menu driven approach allows for the easiest user interface, this design was readily accepted. The menu hierarchy design is illustrated in Figure 4.1. Main menu options are shown as the second row of boxes. The REPORTS selection from the main menu is exploded for a fuller understanding of the structure, however, all of the other menu action items explode similarly with the appropriate functionality. Appendix E - The FWDS User's Guide, provides a detailed description of each menu and the associated action items.

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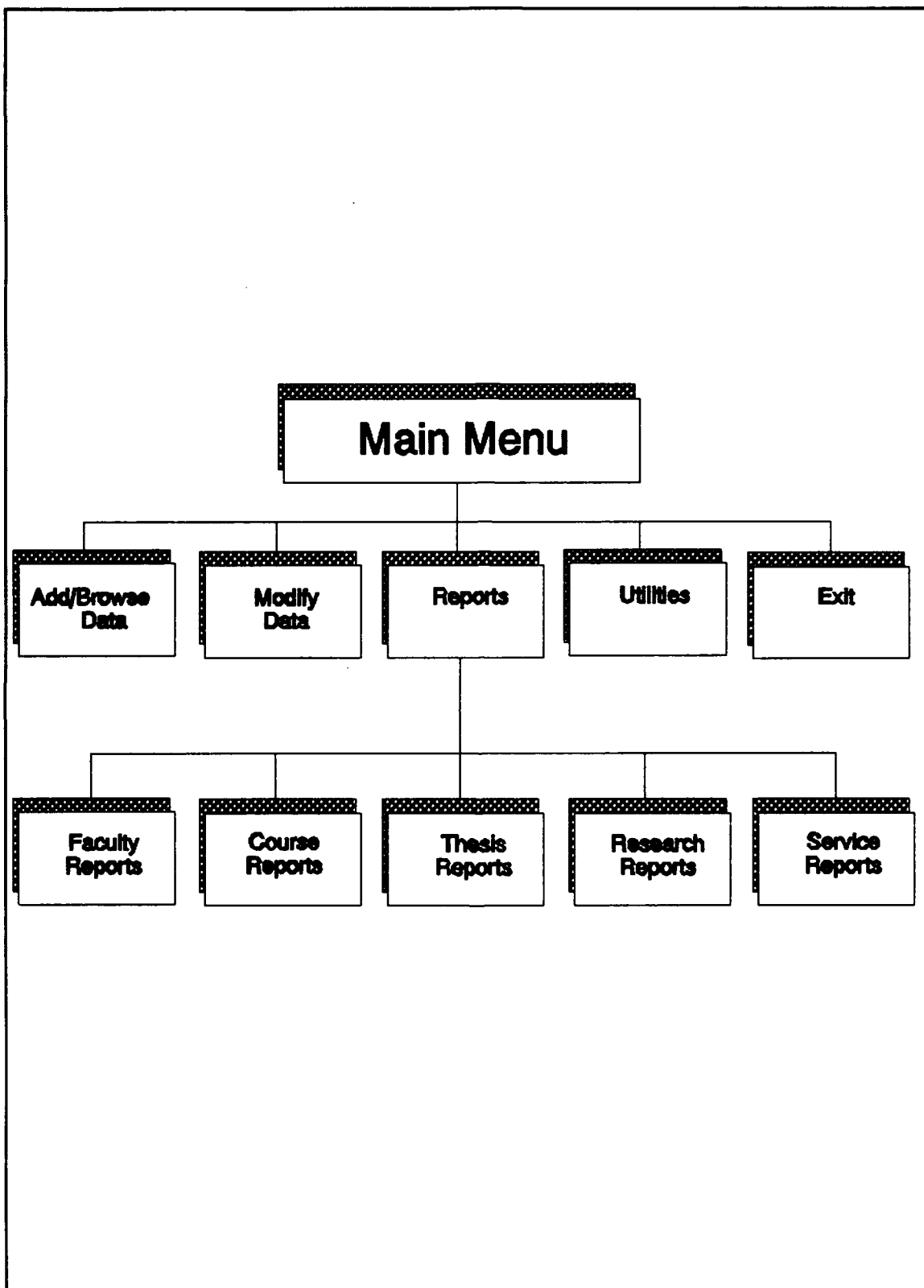
Figure 4.1   FWDS Menu Hierarchy

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2. Screen Design

Screen design for the FWDS application involved the use of dBase IV's excellent screen painting capabilities. The actual design of each input, edit, display screen reflects the required data elements to be used during the selected action. As discussed in Appendix E, the data entry screens use a template approach which "forces" the user to input the data in a correct format and maintain database integrity. Another screen feature was the use of "multiple choice" selection for specific data fields. This function permits the user to scroll through a listing of acceptable inputs and select the appropriate input instead of manually entering the data.

3. Report Design

FWDS initial design consisted of fourteen reports. A review of the FWDS prototype prior to implementation resulted in the creation of one additional report named "Thesis Summary - Short Form". A dBase IV report file was designed for each report. The report file uses a "view" of the relation containing only the fields required for the report to be generated.

FWDS report formats were reviewed during interviews with the system user. All reports are formatted to be printed on standard 8 x 11.5 paper, 60 lines per page with a page number centered on the bottom of every page.

VI. FWDS IMPLEMENTATION

A. SYSTEM PROGRAMMING

Building the system in accordance with the planned design is the primary goal of the implementation phase. Using the dBase IV Control Center functions and the Application Generator, most of the tools for construction of Faculty Workload Database System (FWDS) were provided. The Application Generator produces the dBase IV code associated with the capabilities selected. This code provides the "glue" which holds together the functionality developed for the application through the Control Center. The database files, system views, screen formats, and report structures were first produced using the Control Center. Next, the Applications Generator integrated these modules into the overall FWDS application program. Additional batch procedures were manually programmed using the dBase IV programming language. A complete listing of the pseudocode associated with the FWDS application is provided in Appendix D as documentation and a reference for future program maintenance.

B. TESTING

Each module of the FWDS application was tested thoroughly using black box type testing for functionality. Black box testing uses a set of inputs with predictable results in order

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to ensure that the complete system is working correctly. As the name implies, black box testing is not concerned with the internal process of each module. The type of testing that does handle the internal module processes is called white box testing. White box testing was used extensively during the development of each of the individual FWDS modules. During the black box testing a sample of ten faculty members and their associated activities were used as inputs to the system.

C. INSTALLATION

The last stage of system development is installation. FWDS is an initial version application and as such does not require the "old" method or system to turnover operations. The system can be easily installed on the chosen Administrative Sciences Department's PC and available for immediate use. For a logical and smooth introduction of the FWDS application, it is recommended that the initial system operation commence with FY-93 faculty activity information.

VII. CONCLUSIONS

A. REMARKS

The primary focus of this thesis has been the development and implementation effort associated with the Faculty Workload Database System (FWDS). The FWDS database contains information regarding faculty activity in the areas of course instruction, thesis development, ongoing research, and academic service assignments. Developing the FWDS application using the programming tools provided by dBase IV, was significantly easier than developing a system using a direct or manual programming method.

A significant element of this thesis is the FWDS User's Guide provided in Appendix E. From a day-to-day practical perspective, Appendix E provides the system user with a highly useful document for FWDS operations. The guide was developed using screen capture from the actual FWDS program operations to promote a solid understanding of the system features and capabilities.

Future enhancements for FWDS would include the introduction of mouse support to the application. Selection of possible data inputs and menu action items using a mouse would upgrade the usability and speed of the system. An additional enhancement would be to provide for a bulk transfer

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of data into each of the activity files. Existing information in each of the faculty activity areas needs to be modified and imported to FWDS rather than rely upon manual data entry. Finally, a suggestion is offered to explore the feasibility and benefits of changing the FWDS application from dBase IV to a newer fourth generation programming language and database platform. An alternate database software product may provide desired functionality not available within the current version of FWDS or dBase IV.

APPENDIX A: FWDS DATA MODEL

A. OBJECT DIAGRAMS
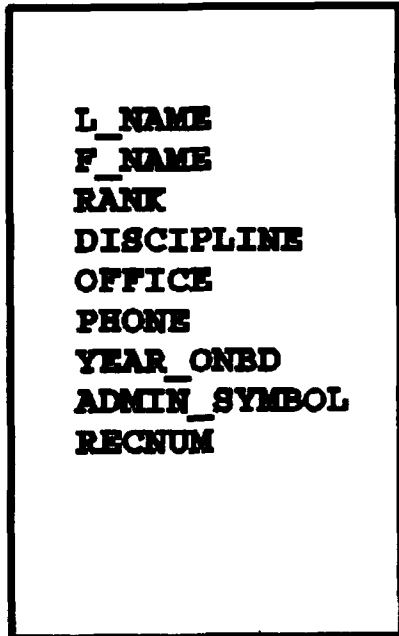
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|   PHONE                   |    |   GRAD_DATE               |
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|   RECNUM                  |    |   T_CREDIT                |
|                           |    |   RECNUM                  |
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|                           |    |   |   FACULTY         |   |
|                           |    |   +-------------------+   |
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+---------------------------+    +---------------------------+
      FACULTY MEMBER                       THESIS
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            |     S_CREDIT              |
            |     RECNUM               |
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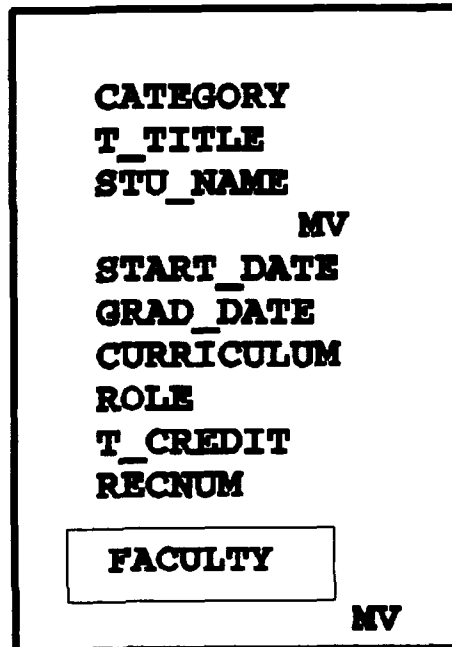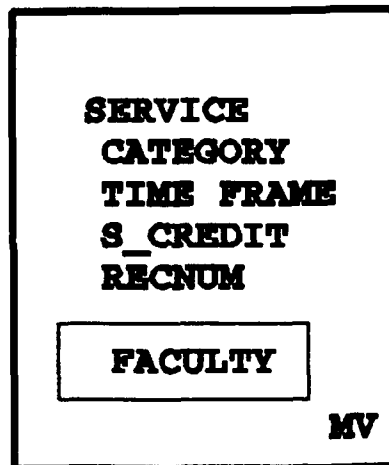
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                               │   └───────────────┘ │
                               │               MV    │
                               │                     │
                               └─────────────────────┘

                                       RESEARCH


      MV = MULTIVALUED


      ┌─────────────────┐
      │                 │   = OBJECT PROPERTY
      └─────────────────┘
```

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B. OBJECT DEFINITIONS

Faculty Member Object

L_NAME; Faculty member last name.
F_NAME; Faculty member first name.
RANK; Faculty member title.
DISC; Faculty member academic discipline.
OFFICE; Faculty member office number.
PHONE; Faculty member phone number.
YR_ONBD; Year faculty member joined NPS.
ADMIN_SYMBOL; Faculty member department admin code.
RECNUM; Record entry date.

Thesis Object

T_TITLE; Thesis title.
STU_NAME; Thesis student last name, MV.
START_DATE; Thesis start date.
GRAD_DATE; Thesis completion date.
CURRICULUM; Thesis student curriculum number.
FACULTY; Faculty OBJECT; MV; SUBSET [L_NAME, F_NAME].
ROLE; Faculty member thesis role.
CATEGORY; Thesis category.
T_CREDIT; Thesis credit.
RECNUM; Record entry date.

Course Object

C_TITLE; Course title.
C_NUM; Course number.
AY_QTR_TAUGHT; Course Academic Year and Quarter Taught.
ENROLLMENT; Course enrollment.
FACULTY; Faculty OBJECT; MV; SUBSET [L_NAME, F_NAME].
ALTERNATE; Alternate course instructor.
ASSISTANT; Assistant course instructor.
C_CREDIT; Course credit.
RECNUM; Record entry date.

Research Object

PROJ_NAME; Research project name.
FACULTY; Faculty OBJECT; MV; SUBSET [L_NAME, F_NAME].
TIME_FRAME; Research project period.
SPONSOR; Research Sponsor.

Research Object (continued)

ARTICLE; Journal article.
PAPER; Conference paper.
REPORT; Technical report.
FUNDING_AMT; Research funding amount.
PAID_DAY; Number of direct labor days.
RECNUM; Record entry date.

Service Object

SERVICE; Service activity name.
CATEGORY; Service category.
TIME_FRAME; Service assignment period.
FACULTY; Faculty OBJECT; MV; SUBSET [L_NAME, F_NAME].
S_CREDIT; Service credit.
RECNUM; Record entry date.

APPENDIX B: FWDS OBJECT RELATIONSHIPS

A. RELATIONAL DIAGRAMS

31
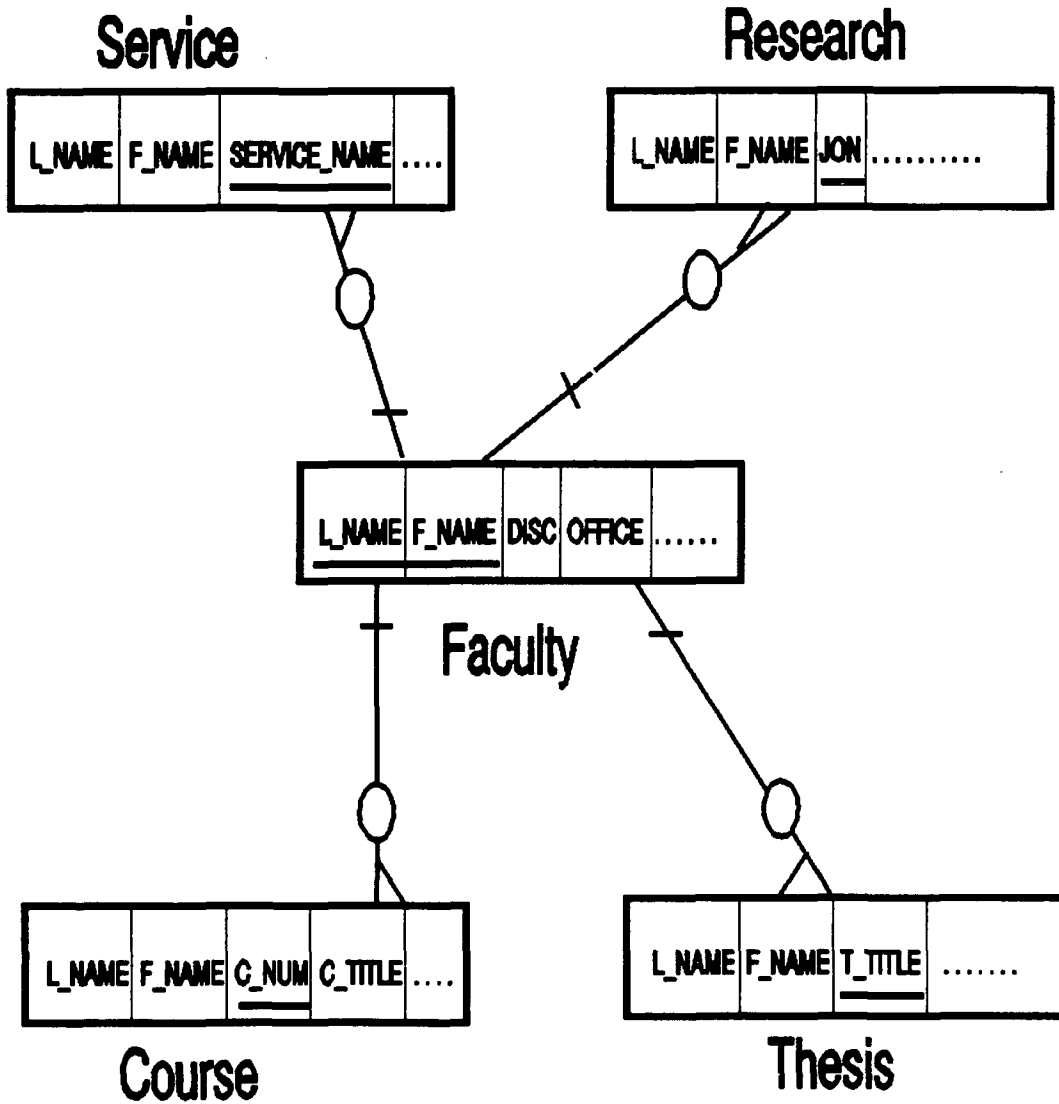
B. RELATION DEFINITIONS

FACULTY		
ATTRIBUTE	**LENGTH**	**TYPE**
L_NAME	15	CHAR
F_NAME	15	CHAR
DISC	4	CHAR
OFFICE	4	CHAR
PHONE	4	CHAR
TITLE	4	CHAR
YR_ONBD	4	CHAR
ADMIN_SYMBOL	4	CHAR
RECNUM	4	DATE

COURSE		
ATTRIBUTE	**LENGTH**	**TYPE**
L_NAME	15	CHAR
F_NAME	15	CHAR
C_NUM	6	CHAR
C_TOPIC	25	CHAR
QTR_TAUGHT	4	CHAR
ENROLLMENT	3	NUM
ALTERNATE	15	CHAR
ASSISTANT	15	CHAR
SOF	4	FLOAT
C_CREDIT	3	FLOAT
RECNUM	8	DATE

THESIS		
ATTRIBUTE	**LENGTH**	**TYPE**
L_NAME	15	CHAR
F_NAME	15	CHAR
T_TITLE	50	CHAR
CATEGORY	15	CHAR
STU_NAME	15	CHAR
START_DATE	8	DATE
GRAD_DATE	8	DATE
CURRICULUM	3	CHAR
ROLE	6	CHAR
T_CREDIT	3	FLOAT
RECNUM	8	DATE

SERVICE		
ATTRIBUTES	**LENGTH**	**TYPE**
L_NAME	15	CHAR
F_NAME	15	CHAR
SERVICE	25	CHAR
CATEGORY	10	CHAR
TIME_FRAME	11	CHAR
S_CREDIT	2	NUM
RECNUM	8	DATE

RESEARCH		
ATTRIBUTE	**LENGTH**	**TYPE**
L_NAME	15	CHAR
F_NAME	15	CHAR
PROJ_NAME	25	CHAR
TIME_FRAME	11	CHAR
SPONSOR	15	CHAR
ARTICLE	1	NUM
PAPER	1	NUM
REPORT	1	NUM
FUND_AMT	6	FLOAT
PAID_DAY	5	FLOAT
RECNUM	8	DATE

APPENDIX C: DATA DICTIONARY

A.   TABLE 1:   DATA FILES

FILE NAME	T Y P E DESCRIPTION
FACULTY.DBF	DATA ATTRIBUTES ABOUT A FACULTY MEMBER
COURSE.DBF	DATA ATTRIBUTES ABOUT A COURSE
THESIS.DBF	DATA ATTRIBUTES ABOUT A THESIS
RESEARCH.DBF	DATA ATTRIBUTES ABOUT A RESEARCH PROJECT
SERVICE.DBF	DATA ATTRIBUTES ABOUT A SERVICE ASSIGNMENT

B. TABLE 2: FACULTY.DBF DATA ELEMENTS

ELEMENT	TYPE	WIDTH	DESCRIPTION
L_NAME	CHAR	15	LAST NAME OF FACULTY MEMBER
F_NAME	CHAR	15	FIRST NAME OF FACULTY MEMBER
DISC	CHAR	4	DISCIPLINE OF FACULTY MEMBER
OFFICE	CHAR	4	OFFICE NUMBER OF FACULTY MEMBER
PHONE	CHAR	4	LAST FOUR DIGITS OF FACULTY MEMBER PHONE NUMBER
TITLE	CHAR	4	TITLE OF FACULTY MEMBER
YR_ONBD	CHAR	4	NPS JOINING YEAR FOR FACULTY MEMBER
ADMIN_SY	CHAR	4	ADMINISTRATIVE SYMBOL ASSIGNED TO FACULTY MEMBER
RECNUM	DATE	8	RECORD ENTRY DATE

C.   TABLE 3:   COURSE.DBF DATA ELEMENTS

ELEMENT	TYPE	WIDTH	DESCRIPTION
L_NAME	CHAR	15	COURSE INSTRUCTOR LAST NAME
F_NAME	CHAR	15	COURSE INSTRUCTOR FIRST NAME
C_NUM	CHAR	6	NPS COURSE NUMBER
C_TOPIC	CHAR	25	COURSE DESCRIPTION
QTR_TAUGHT	CHAR	4	QUARTER COURSE TAUGHT
ENROLLMENT	NUM	3	COURSE ENROLLMENT
ALTERNATE	CHAR	15	LAST NAME OF ALTERNATE COURSE INSTRUCTOR
ASSISTANT	CHAR	15	LAST NAME OF ASSISTANT COURSE INSTRUCTOR
SOF	FLOAT	4	CUMULATIVE INSTRUCTOR SOF SCORE FOR COURSE SECTION
C_CREDIT	FLOAT	3	CUMULATIVE INSTRUCTOR CREDIT FOR COURSE SECTION
RECNUM	DATE	8	RECORD ENTRY DATE

D. TABLE 4: THESIS.DBF DATA ELEMENTS

ELEMENT	TYPE	WIDTH	DESCRIPTION
L_NAME	CHAR	15	LAST NAME OF THESIS ADVISOR
F_NAME	CHAR	15	FIRST NAME OF THESIS ADVISOR
T_TITLE	CHAR	50	THESIS TITLE
CATEGORY	CHAR	15	THESIS CATEGORY
STU_NAME_1	CHAR	15	LAST NAME OF FIRST THESIS STUDENT
STU_NAME_2	CHAR	15	LAST NAME OF SECOND THESIS STUDENT
START_DATE	DATE	8	THESIS START DATE
GRAD_DATE	DATE	8	THESIS COMPLETION DATE
CURRICULUM	CHAR	3	THESIS STUDENT CURRICULUM NUMBER
ROLE	CHAR	6	ROLE OF THESIS ADVISOR
T_CREDIT	FLOAT	3	THESIS CREDIT
RECNUM	DATE	8	RECORD ENTRY DATE

E.   TABLE 5:   RESEARCH.DBF DATA ELEMENTS

ELEMENTS	TYPE		WIDTH DESCRIPTION
L_NAME	CHAR	15	LAST NAME OF FACULTY MEMBER CONDUCTING RESEARCH
F_NAME	CHAR	15	FIRST NAME OF FACULTY MEMBER CONDUCTING RESEARCH
PROJ_NAME	CHAR	25	RESEARCH PROJECT TITLE
TIME_FRAME	CHAR	11	TIME FRAME OF RESEARCH PROJECT
SPONSOR	CHAR	15	RESEARCH PROJECT SPONSOR
ARTICLE	NUM	1	CUMULATIVE NUMBER OF ARTICLES ASSOCIATED WITH RESEARCH PROJECT
PAPER	NUM	1	CUMULATIVE NUMBER OF TECHNICAL PAPERS ASSOCIATED WITH RESEARCH PROJECT
REPORT	NUM	1	CUMULATIVE NUMBER OF TECHNICAL REPORTS ASSOCIATED WITH RESEARCH PROJECT
FUND_AMT	FLOAT	6	TOTAL RESEARCH FUNDING
PAID_DAY	FLOAT	5	RESEARCH FUNDS EXPENDED
RECNUM	DATE	8	RECORD ENTRY DATE

F. TABLE 6: SERVICE.DBF DATA ELEMENTS

ELEMENTS	TYPE	WIDTH	DESCRIPTION
L_NAME	CHr	15	LAST NAME OF FACULTY MEMBER ASSIGNED TO SERVICE
F_NAME	CHAR	15	FIRST NAME OF FACULTY MEMBER ASSIGNED TO SERVICE
SERVICE	CHAR	25	SERVICE TITLE
CATEGORY	CHAR	10	SERVICE CATEGORY
TIME_FRAME	CHAR	11	SERVICE ASSIGNMENT PERIOD
S_CREDIT	NUM	2	SERVICE CREDIT
RECNUM	DATE	8	RECORD ENTRY DATE

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G. TABLE 7: FACULTY WORKLOAD DATABASE SYSTEM VIEWS

VIEW FILE	DATA FILE USED	DATA ELEMENTS
COMMITTE.QBE	FACULTY.DBF SERVICE.DBF TIME_FRAME	SERVICE, L_NAME, F_NAME,
CRED4.QBE	FACULTY.DBF RESEARCH.DBF	PAID_DAY, ARTICLE, PAPER, REPORT, L_NAME, F_NAME, PROJ_NAME, TIME_FRAME, SPONSOR, JON, FUND_AMT
CRED4A.QBE	FACULTY.DBF RESEARCH.DBF	PAID_DAY, ARTICLE, PAPER, REPORT, L_NAME, F_NAME, PROJ_NAME, TIME_FRAME, SPONSOR, JON, FUND_AMT
CRSE_ALL.QBE	COURSE.DBF	QTR_TAUGHT, C_TOPIC, L_NAME, F_NAME, ALTERNATE, ASSISTANT, ENROLLMENT, SOF, C_CREDIT, C_NUM
CRSE_SUM.QBE	COURSE.DBF	QTR_TAUGHT, C_TOPIC, L_NAME, F_NAME, ALTERNATE, ASSISTANT, ENROLLMENT, SOF, C_CREDIT, C_NUM
CRSE_FAC.QBE	COURSE.DBF	QTR_TAUGHT, C_TOPIC, L_NAME, F_NAME, ALTERNATE, ASSISTANT, ENROLLMENT, SOF, C_CREDIT, C_NUM
CRS_TOT.QBE	COURSE.DBF	QTR_TAUGHT, C_TOPIC, L_NAME, F_NAME, ALTERNATE, ASSISTANT, ENROLLMENT, SOF, C_CREDIT, C_NUM
FAC_DATA.QBE	FACULTY.DBF	L_NAME, F_NAME, TITLE, YR_ONBD, DISC, OFFICE, PHONE, ADMIN_SYMBOL
PRODUCT.QBE	FACULTY.DBF RESEARCH.DBF	L_NAME, F_NAME, PROJ_NAME, TIME_FRAME,

VIEW FILE	DATA FILE USED	DATA ELEMENTS
		SPONSOR, FUND_AMT, PAID_DAY, JON, ARTICLE, PAPER, REPORT
RSCH_SUM.QBE	FACULTY.DBF RESEARCH.DBF	L_NAME, F_NAME, PROJ_NAME, TIME_FRAME, SPONSOR, FUND_AMT, PAID_DAY, JON, ARTICLE, PAPER, REPORT
SERV_FAC.QBE	FACULTY.DBF SERVICE, SERVICE.DBF TIME_FRAME,	L_NAME, F_NAME, CATEGORY, S_CREDIT
SERV_TOT.QBE	FACULTY.DBF	L_NAME, F_NAME, SERVICE, SERVICE.DBF CATEGORY, TIME_FRAME, S_CREDIT
TS_CATEG.QBE	FACULTY.DBF THESIS.DBF	CATEGORY, T_TITLE, L_NAME, F_NAME, ROLE, STU_NAME_1, STU_NAME_2, GRAD_DATE, CURRICULUM
TS_ROLE.QBE	FACULTY.DBF THESIS.DBF	CATEGORY, T_TITLE, L_NAME, F_NAME, ROLE, STU_NAME_1, STU_NAME_2, GRAD_DATE, START_DATE, T_CREDIT, CURRICULUM
TS_ROLE1.QBE	FACULTY.DBF THESIS.DBF	CATEGORY, T_TITLE, L_NAME, F_NAME, ROLE, STU_NAME_1, STU_NAME_2, GRAD_DATE, START_DATE, T_CREDIT, CURRICULUM

H. TABLE 10: REPORTS

REPORT FILE	VIEW FILE	DESCRIPTION
COMMRPT.FRG	COMMITTE.QBE	SERVICE ASSIGNMENT REPORT
CRSEFACR.FRG	CRS_FAC.QBE	COURSE LISTING BY FACULTY
CRSESUM.FRG	CRS_SUM.QBE	COURSE SUMMARY BY QUARTER
CRSE_TOT	CRS_TOT.QBE	SUMMARY OF ALL COURSES
FAC_LIST.FRG	FAC_DAT.QBE	FACULTY DATA REPORT
RSCFACRP.FRG	CRED4.QBE	RESEARCH PROJECT SUMMARY BY FACULTY
RSCPRODRP.FRG	PRODUCT.QBE	RESEARCH WORK LISTED WITH OUTPUT FIRST
RSCSUMRP.FRG	RSCH_SUM.QBE	RESEARCH LISTING BY SPONSOR
RSC_TOT.FRG	CRED4A.QBE	TOTAL RESEARCH REPORT
SERVTRPT.FRG	SERV_TOT.QBE	TOTAL SERVICE REPORT
SERV_RPT.FRG	SERV_FAC.QBE	SERVICE REPORT BY FACULTY MEMBER
SHORTRPT.FRG	TS_ROLE.QBE	THESIS SUMMARY SHORT REPORT FORMAT
THECATRP.FRG	TS_CATEG.QBE	THESIS SUMMARY REPORT BY CATEGORY
THESUMRP.FRG	TS_ROLE.QBE	THESIS SUMMARY BY FACULTY MEMBER
THES_TOT.FRG	TS_ROLE1.QBE	TOTAL THESIS SUMMARY

Application Documentation for System: FACMGR.PRG

Application Author: LCDR Bob Zellmann

dBASE IV Version.....: 1.1

Display Application Sign-On Banner: Yes

Screen Image:
```
   0          10         20         30         40         50
  60         70

>.....+....|....+....|....+....|....+....|....+....|....+...
00:
01:
02:
03:
04:
05:
#================================================================
#
06:              "
                   "
07:              "            **** FACULTY WORKLOAD MANAGER ****
                   "
08:              "
                   "
09:              "                A dBASE IV Application
                   "
10:              "                         -
                   "
11:              "                By  LCDR Bob Zellmann
                   "
12:              "
                   "
13:              "                        1992
                   "
14:              "
                   "
15:              "
                   "
```

```
16:
#=========================================================
#
17:
```

Main Menu to Open after Sign-On: FACMAIN.BAR

Sets for Application:

```
  Bell         ON
  Carry        OFF
  Centry       OFF
  Confirm      OFF
  Delimiters   OFF
  Display Size 25 lines
  Drive
  Escape       ON
  Path
  Safety       ON
```

Starting Colors for Application:

```
 Color Settings:
   Text          : W+/B
   Heading       : W/B
   Highlight     : GR+/BG
   Box           : GR+/BG
   Messages      : W+/N
   Information   : B/W
   Fields        : N/BG
```

Database/View: FACULTY


```
======================================================================
```

Layout Report for Horizontal Bar Menu: FACMAIN

```
Screen Image:
   0          10         20         30         40         50
  60          70


>.....+....|....+....|....+....|....+....|....+....|....+...
00:#=================================================================
01:"     Add/Browse Data     Modify Data     Reports
Utilities          Exit
02:#=================================================================
```

Setup for FACMAIN follows:

Description: Faculty Workload Application main menu

Colors for Menu/Picklist:

 Color Settings:
   Text   : W+/B
   Heading   : W/B
   Highlight   : GR+/BG
   Box   : GR+/BG
   Messages   : W+/N
   Information   : B/W
   Fields   : N/BG

Bar actions for Menu FACMAIN follow:

Bar: 1
 Prompt: Add/Browse Data
 Action: Open a Popup Menu Named: ADD_DATA

Bar: 2
 Prompt: Modify Data
 Action: Open a Popup Menu Named: BIGUPDAT

Bar: 3
 Prompt: Reports
 Action: Open a Popup Menu Named: REPORTS

Bar: 4
 Prompt: Utilities
 Action: Open a Popup Menu Named: FACUTIL

Bar: 5
 Prompt: Exit
 Action: Open a Popup Menu Named: FACEXIT

Layout Report for Popup Menu: ADD_DATA

Screen Image:
     0   10   20   30   40   50
    60   70

>.....+....|....+....|....+....|....+....|....+....|....+...
00:
01:
02:          #============================#
```

```
03:             " Add NEW Faculty Data        "
04:             " Browse ALL Faculty Data     "
05:             "                             "
06:             " Add NEW Course Data         "
07:             " Browse ALL Course Data      "
08:             "                             "
09:             " Add NEW Thesis Data         "
10:             " Browse ALL Thesis Data      "
11:             "                             "
12:             " Add a NEW Research Project  "
13:             " Browse ALL Research Work    "
14:             "                             "
15:             " Add NEW Service Data        "
16:             " Browse Service Data         "
17:             #============================#
18:
19:
20:
21:
22:
23:
```

Setup for ADD_DATA follows:

 Description: data entry and browse menus

 Database/View: FAC_DATA.QBE

Colors for Menu/Picklist:

 Color Settings:
   Text   : W+/B
   Heading   : W/B
   Highlight   : GR+/BG
   Box   : GR+/BG
   Messages   : W+/N
   Information   : B/W
   Fields   : N/BG

Help Defined for Menu ADD_DATA:
----
         * Select the appropriate action menu.

         * See the users manual for additional information.

Bar actions for Menu ADD_DATA follow:

```
Bar: 1
 Prompt: Add NEW Faculty Data
 Action: APPEND
 Format File: fac_entr.fmt
 New Database/View: FACULTY.DBF
```

Help text defined for this item:
----
          * Ensure capitalization of Last and First name is
            correct and consistent with the database.

           * Select the appropriate entry for Title and
             Discipline multiple choices.

          * Phone number is the last four digits of the
            extension.

          * Office number should start with a letter, I for
            Ingersoll.

          * Code will start with AS for Admin Science
            department.

          * See the users manual for additional
information.

After dBASE Code for this item:

   REPLACE ALL RECDATE WITH DATE() FOR RECDATE = {}

```
Bar: 2
 Prompt: Browse ALL Faculty Data
 Action: Browse File
 Command Options:
  NOAPPEND  NODELETE  NOEDIT
  FORMAT
 Format File: fac_entr.fmt
```

Before dBASE Code for this item:
----
   use faculty order NAMES1

```
Bar: 3
 Prompt: Add NEW Course Data
 Action: APPEND
 Format File: crs_entr.fmt
 New Database/View: COURSE.DBF
```

Help text defined for this item:
----
             * Enter section number with the course number.

             * Ensure capitalization of Last and First name is
             correct and consistent with the database.

             * For Quarter Taught use Q1 for Fall
                                      Q2 for Winter
                                      Q3 for Spring
                                      Q4 for Summer.

             * See the users manual for additional
information.

After dBASE Code for this item:

   REPLACE ALL RECDATE WITH DATE() FOR RECDATE ={}

Bar: 4
 Prompt: Browse ALL Course Data
 Action: Browse File
 Command Options:
  NOAPPEND NODELETE NOEDIT
  FORMAT
 Format File: crsbrows.fmt
 New Database/View: CRSE_ALL.QBE
Bar: 5
 Prompt: Add NEW Thesis Data
 Action: APPEND
 Format File: the_entr.fmt
 New Database/View: THESIS.DBF

Help text defined for this item:
----
             * For Role enter TP-OLD for Primary Advisor, old
             system, value 1.5
               TC-OLD for Co-Advisor, old system, value 1.0
               TA-OLD for Associate, old system, value .50
               TP- for Primary Advisor, new system, value 1.0
               TC- for Co-Advisor, new system, value .75
               TA- for Associate, new system, value .50.

             * Use three digit curriculum number.

             * See the users manual for additional
information.

After dBASE Code for this item:

```
    REPLACE ALL RECDATE WITH DATE() FOR RECDATE = {}
```

```
Bar: 6
 Prompt: Browse ALL Thesis Data
 Action: Browse File
 Command Options:
  NOAPPEND  NODELETE  NOEDIT
  FORMAT
 Format File: tsbrowse.fmt
 New Database/View: TS_ROLE.QBE
```

```
Bar: 7
 Prompt: Add a NEW Research Project
 Action: APPEND
 Format File: rsc_entr.fmt
 New Database/View: RESEARCH.DBF
```

```
 Help text defined for this item:
```

```
            * Funding Amount is in thousands of dollars.

            * Use a decimal point to record Paid Days.

            * See the users manual for additional
information.
```

```
 After dBASE Code for this item:
```

```
    REPLACE ALL RECDATE WITH DATE() FOR RECDATE = {}
```

```
Bar: 8
 Prompt: Browse ALL Research Work
 Action: Browse File
 Command Options:
  NOAPPEND  NODELETE  NOEDIT
  FORMAT
 Format File: rscbrows.fmt
 New Database/View: CRED4.QBE
```

```
Bar: 9
 Prompt: Add NEW Service Data
 Action: APPEND
 Format File: svc_entr.fmt
 New Database/View: SERVICE.DBF
```

```
 Help text defined for this item:
```
----

* Period uses YYMMM-YYMMM format.

* See the users manual for additional information.

After dBASE Code for this item:
- -
    REPLACE ALL RECDATE WITH DATE() FOR RECDATE = {}
- -

Bar: 10
 Prompt: Browse Service Data

 Action: Browse File
 Command Options:
  NOAPPEND NODELETE NOEDIT
  FORMAT
 Format File: svcbrows.fmt
 New Database/View: COMMITTE.QBE
- -
Layout Report for Popup Menu: BIGUPDAT
- -

Screen Image:
     0   10   20   30   40   50
     60   70

>.....+....|....+....|....+....|....+....|....+....|....+...
00:
01:
02:                                #======================#
03:                                " Modify Faculty Data "
04:                                "   "
05:                                " Modify Course Data   "
06:                                "   "
07:                                " Modify Thesis Data   "
08:                                "   "
09:                                " Modify Research Data "
10:                                "   "
11:                                " Modify Service Data   "
12:                                "   "
13:                                " Purge Marked Records "
14:                                #======================#
15:
16:
17:
18:
19:

```
20:
21:
22:
23:
24:

>.....+....|....+....|....+....|....+....|....+....|....+...
```

Setup for BIGUPDAT follows:

 Description: main update menu for Faculty, Course, Thesis,
Rsch, Committee

Colors for Menu/Picklist:

 Color Settings:
    Text   : W+/B
    Heading   : W/B
    Highlight   : GR+/BG
    Box   : GR+/BG
    Messages   : W+/N
    Information   : B/W
    Fields   : N/BG

Help Defined for Menu BIGUPDAT:
----
            * Select the appropriate action menu to modify the
                desired database.

            * Use the PURGE RECORDS menu after the required
                records have been marked for deletion.

Bar actions for Menu BIGUPDAT follow:

Bar: 1
 Prompt: Modify Faculty Data
 Action: EDIT
 Command Options:
  NOAPPEND
 Format File: fac_updt.fmt
 Set Order To NAMES
 New Database/View: FACULTY
 New Index Order: L_NAME

 Help text defined for this item:
 ----

and
* Ensure capitalization is correct for the Last
       First name.
dBase considers a name spelled in all caps as
different from the same name spelled in lower
case.

* Office number should start with a letter, I for
Ingersoll.

fields,
* Discipline and Title are multiple choice
       select the appropriate entry.

* The first two letters of the Code field will
usually be AS for Admin Science department.

* Phone number is the last four digits of the
extension.

delete
* Select Mark record for deletion via F10, then
select PURGE RECORDS from the main menu to
       a record.

* See the users manual for further information.

 Before dBASE Code for this item:
----
   use faculty ORDER NAMES1

Bar: 2
 Prompt: Modify Course Data
 Action: EDIT
 Format File: crs_updt.fmt
 New Database/View: COURSE

 Help text defined for this item:
----
* Include section number in course number.

and
* Ensure capitalization is correct for the Last
       First name fields.

* For Quarter Taught use Q1 for Fall
                         Q2 for Winter
                         Q3 for Spring
                         Q4 for Summer.

* Credit is total course credit for the section.

* Select Mark records for deletion via F10, then
               select PURGE RECORDS from the main menu to
delete   a record.

             * See the users manual for further information.

 Before dBASE Code for this item:

    USE COURSE ORDER QUARTER

Bar: 3
 Prompt: Modify Thesis Data
 Action: EDIT
 Format File: the_updt.fmt

 Help text defined for this item:
 ----
             * For Role use TP-OLD for Primary Advisor old
               system, value 1.5
               TC-OLD for Co-Advisor old system, value 1.0
               TA-OLD for Associate old system, value .50
               TP- for Primary Advisor new system, value 1.0
               TC- for Co-Advisor new system, value .75
               TA- for Associate new system, value .50

             * Ensure a decimal point is used to record
credit.

             * Select Mark record for deletion via F10, then
               select PURGE RECORDS from the main menu to
delete   a record.

             * See the users manual for additional
information.

 Before dBASE Code for this item:

    USE THESIS ORDER L_NAME

Bar: 4
 Prompt: Modify Research Data
 Action: EDIT
 Format File: rsc_updt.fmt

54

Help text defined for this item:
----
            * Timeframe uses yymmm-yymmm format.

            * Funding is in thousands of dollars.

            * Ensure a decimal point is used to record Paid
              days.

            * Select Mark record for deletion via F10, then
              select PURGE RECORDS from the main menu to
delete   a record.

            * See the users manual for additional
information.

 Before dBASE Code for this item:

    USE RESEARCH ORDER L_NAME

Bar: 5
 Prompt: Modify Service Data
 Action: EDIT
 Format File: svc_updt.fmt

 Help text defined for this item:
----
            * Period uses yymmm-yymmm format.

            * Ensure Last and First name capitalization is
              correct and consistent within the database.

            * Select Mark records for deletion via F10, then
              select PURGE RECORDS from the main menu to
delete   a record.

            * See the users manual for additional
information.

 Before dBASE Code for this item:

    USE SERVICE ORDER COMM_NAME

Bar: 6
 Prompt: Purge Marked Records
 Action: Pack Current File

55

```
Before dBASE Code for this item:
---------------------------------
   USE FACULTY ORDER L_NAME
   PACK
   USE COURSE ORDER QUARTER
   PACK
   USE THESIS ORDER L_NAME
   PACK
   USE RESEARCH ORDER L_NAME
   PACK
   USE SERVICE ORDER COMM_NAME
   PACK



 After dBASE Code for this item:
---------------------------------
   @ 10, 10 SAY "All Marked Records have been ERASED"
   WAIT
------------------------------------------------------------------



Layout Report for Popup Menu: REPORTS
---------------------------------------



Screen Image:
   0          10          20          30          40          50
   60          70

>.....+....|....+....|....+....|....+....|....+....|....+...
00:
01:
02:
#==========================================#
03:                      " Faculty Data
         "
04:                      "
         "
05:                      " Course Summary (by Qtr)-2 YR only
         "
06:                      " Course Summary (by Faculty)-2 YR
only    "
07:                      " Course Summary - All years
         "
08:                      "
         "
09:                      " Thesis Summary (by Category)-3 YR
only    "
10:                      " Thesis Summary (by Faculty)-3 YR
only      "
```

```
11:                         " Thesis Summary - All years
         "
12:                         " Thesis Summary - Short Report-3 YR
only   "
13:                              "
         "
14:                         " Research Summary (by Sponsor)-3 YR
only   "
15:                         " Research Summary (by Faculty)-3 YR
only   "
16:                         " Research Summary (with Output)-3
YR only "
17:                         " Research Summary - All years
         "
18:                              "
         "
19:                         " Service Summary (by Service)-3 YR
only    "
20:                         " Service Summary (by Faculty)-3 YR
only    "
21:                         " Service Summary - All years
         "
22:
#==========================================#
23:
24:

>.....+....|....+....|....+....|....+....|....+....|....+...

Setup for REPORTS follows:
--------------------------

 Description: Pop-up menu for report generation

Colors for Menu/Picklist:
-------------------------
 Color Settings:
   Text          : W+/B
   Heading       : W/B
   Highlight     : GR+/BG
   Box           : GR+/BG
   Messages      : W+/N
   Information    : B/W
   Fields        : N/BG


Help Defined for Menu REPORTS:
------------------------------
        * Select the desired report to generate.
```

* Ensure the printer is aligned and turned on prior
to selecting to send the output to LPT1.

The selection of material for a report is based upon
the RECNUM field and the current date of the system.
If a two year report is generated, it will use this
field and the current date to decide which items to
include. If other information is desired two options
are available: (1) Use the change system date
funtion in the Utilities Menu and set the date
backward to ensure the data is reported. or (2)
Select Browse data from the Enter Data Menu and
change the RECNUM field...(This method is risky as
failure to return the RECNUM field to the original
value will corrupt the database.)

See the users manual for additional information.

Bar actions for Menu REPORTS follow:

Bar: 1
 Prompt: Faculty Data
 Action: Run Report Form FAC_LIST.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: FAC_DATA.QBE

 Before dBASE Code for this item:

   _PLoffset=5
   _Plength=60

Bar: 2
 Prompt: Course Summary (by Qtr)-2 YR only
 Action: Run Report Form CRSESUMR.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: CRSE_SUM.QBE

 Before dBASE Code for this item:

   _PLoffset=5
   _Plength=60

Bar: 3

Prompt: Course Summary (by Faculty)-2 YR only
Action: Run Report Form CRSEFACR.frm
Command Options:
 PLAIN

Print Mode: Ask User at Runtime
New Database/View: CRS_FAC_.QBE

Before dBASE Code for this item:

   _Plength=60
   _PLoffset=5

Bar: 4
 Prompt: Course Summary - All years
 Action: Run Report Form CRSE_TOT.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: CRS_TOT.QBE

 Before dBASE Code for this item:

    _Plength=60
    _PLoffset=5

Bar: 5
 Prompt: Thesis Summary (by Category)-3 YR only
 Action: Run Report Form THECATRP.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: TS_CATEG.QBE

 Before dBASE Code for this item:

    _Plength=60
    _PLoffset=5

Bar: 6
 Prompt: Thesis Summary (by Faculty)-3 YR only
 Action: Run Report Form THESUMRP.frm
 Command Options:
  PLAIN

```
Print Mode: Ask User at Runtime
New Database/View: TS_ROLE.QBE

 Before dBASE Code for this item:
 ------------------------------
   _Plength=60
   _PLoffset=5
--------------------------------------------------------

Bar: 7
 Prompt: Thesis Summary - All years
 Action: Run Report Form THES_TOT.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: TS_ROLE1.QBE




 Before dBASE Code for this item:
 ------------------------------
   _Plength=60
   _PLoffset=5
--------------------------------------------------------

Bar: 8
 Prompt: Thesis Summary - Short Report-3 YR only
 Action: Run Report Form SHORTRPT.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: TS_ROLE.QBE

 Before dBASE Code for this item:
 ------------------------------
   _Plength=60
   _PLoffset=5
--------------------------------------------------------

Bar: 9
 Prompt: Research Summary (by Sponsor)-3 YR only
 Action: Run Report Form RSCSUMRP.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: RSCH_SUM.QBE
```

```
Before dBASE Code for this item:
--------------------------------
   _Plength=60
   _PLoffset=5
----------------------------------------------------------------

Bar: 10
 Prompt: Research Summary (by Faculty)-3 YR only
 Action: Run Report Form RSCFACRP.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: CRED4.QBE




 Before dBASE Code for this item:
--------------------------------
   _Plength=60
   _PLoffset=5
----------------------------------------------------------------

Bar: 11
 Prompt: Research Summary (with Output)-3 YR only
 Action: Run Report Form RSCPRODR.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: PRODUCT.QBE

 Before dBASE Code for this item:
--------------------------------
   _Plength=60
   _PLoffset=5
----------------------------------------------------------------

Bar: 12
 Prompt: Research Summary - All years
 Action: Run Report Form RSC_TOT.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: CRED4A.QBE

 Before dBASE Code for this item:
--------------------------------
   _Plength=60
```

```
  _PLoffset=5
------------------------------------------------------------------

Bar: 13
 Prompt: Service Summary (by Service)-3 YR only
 Action: Run Report Form COMM_RPT.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: COMMITTE.QBE

 Before dBASE Code for this item:
 -------------------------------
   _Plength=60
   _PLoffset=5
------------------------------------------------------------------

Bar: 14
 Prompt: Service Summary (by Faculty)-3 YR only
 Action: Run Report Form SERV_RPT.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: SERV_FAC.QBE




 Before dBASE Code for this item:
 -------------------------------
   _Plength=60
   _PLoffset=5
------------------------------------------------------------------

Bar: 15
 Prompt: Service Summary - All years
 Action: Run Report Form SERVTRPT.frm
 Command Options:
  PLAIN

 Print Mode: Ask User at Runtime
 New Database/View: SERV_TOT.QBE

 Before dBASE Code for this item:
 -------------------------------
   _Plength=60
   _PLoffset=5
------------------------------------------------------------------
```

Layout Report for Popup Menu: FACUTIL

Screen Image:
```
     0          10          20          30          40          50
   60          70


  >.....+....|....+....|....+....|....+....|....+....|....+...
  00:
  01:
  02:
  #==============================
  03:                                                    " Change
  System Date
  04:                                                    " Back up
  Databases to Drive A
  05:                                                    " Repair
  Corrupted Index
  06:                                                    " Copy
  Application to Drive A
  07:
  #==============================
  08:
  09:
  10:
  11:
  12:
  13:
  14:
  15:
  16:
  17:
  18:
```
Setup for FACUTIL follows:

 Description: Utilities pop-up menu

Colors for Menu/Picklist:

 Color Settings:
   Text   : W+/B
   Heading   : W/B
   Highlight   : GR+/BG
   Box   : GR+/BG
   Messages   : W+/N
   Information   : B/W
   Fields   : N/BG

Help Defined for Menu FACUTIL:

```
------------------------------
            * Change System Date function will allow the
        overall system date to be modified.

            * Back-up databases function will copy all the
        database files and associated indexes to drive A. If
        another drive is desired, use the DOS ASSIGN command
        (ie. ASSIGN A: = B:).

            * Repair Corrupted Indexes after a power outage
        while using the system.

            * Copy Application will copy the entire application
        to drive A and the database files.

            * See the users manual for additional information.
```

Bar actions for Menu FACUTIL follow:

Bar: 1
 Prompt: Change System Date
 Action: Run Dos Program - DATE

Bar: 2
 Prompt: Back up Databases to Drive A
 Action: Call Batch Named: COPYDATA

 After dBASE Code for this item:

   @ 0,0 clear
   @ 10, 10 SAY "BACKUP of Databases complete."
   wait

Bar: 3
 Prompt: Repair Corrupted Index
 Action: Insert the following dBASE code:

```
   SET TALK ON      && SHOW PROGRESS
   USE FACULTY
   REINDEX
   USE COURSE
   REINDEX
   USE THESIS
   REINDEX
   USE RESEARCH
   REINDEX
   USE SERVICE
   REINDEX
```

SET TALK OFF   && SUPPRESS PROGRESS MESSAGES.

 After dBASE Code for this item:

   @ 10, 10 SAY "All Databases have been REINDEXED."
   WAIT

Bar: 4
 Prompt: Copy Application to Drive A
 Action: Run Dos Program - COPY *.* A:

 After dBASE Code for this item:

   @ 0,0 clear
   @ 10, 10 SAY "Copying of the Faculty Workload Manager "
   @ 11, 10 SAY "   to Drive A is COMPLETE."
   WAIT

Layout Report for Popup Menu: FACEXIT

Screen Image:
    0   10   20   30   40   50
   60   70

>.....+....|....+....|....+....|....+....|....+....|....+...
00:
01:
02:
#==================
03:
" Return to dBase I
04:
" Exit to DOS
05:
#==================
06:
07:

Setup for FACEXIT follows:

 Description: Exit pop-up

Colors for Menu/Picklist:

 Color Settings:
   Text   : W+/B
   Heading   : W/B
   Highlight   : GR+/BG
   Box   : GR+/BG
   Messages   : W+/N
   Information   : B/W
   Fields   : N/BG

Help Defined for Menu FACEXIT:
----
            * Return to dBase IV will return the user to the
              dBase Control Center in the Faculty directory.

            * Exit to DOS will shut down the application and
              return the user to the DOS prompt.

Bar actions for Menu FACEXIT follow:

Bar: 1
 Prompt: Return to dBase IV
 Action: Return to calling program

Bar: 2
 Prompt: Exit to DOS
 Action: Quit to DOS:

Multiple Action Summary for Batch Object: COPYDATA

Screen Image:
    0   10   20   30   40   50
   60   70

>.....+....|....+....|....+....|....+....|....+....|....+...
00:
01:
02:
03:
04:
05:                         #================================#

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```
06:                          " Copy Faculty.* A:              "
07:                          " Copy Course.* A:               "
08:                          " Copy Thesis.* A:               "
09:                          " Copy Research.* A:             "
10:                          " Copy Service.* A:              "
11:                          "                                "
12:                          "                                "
13:                          "                                "
14:                          #================================#
15:
16:
17:
18:
19:
20:
21:
22:
Setup for COPYDATA follows:
---------------------------


  Description: copies all dbf and mdx files for the system
databases to A:

Colors for Menu/Picklist:
-------------------------
  Color Settings:
    Text           : W+/B
    Heading        : W/B
    Highlight      : GR+/BG
    Box            : GR+/BG
    Messages       : W+/N
    Information    : B/W
    Fields         : N/BG



Batch actions for Menu COPYDATA follow:
---------------------------------------
Batch Action: 1
 Prompt: Copy Faculty.* A:
 Action: Run Dos Program - COPY Faculty.* A:

 Before dBASE Code for this item:
 -------------------------------
    USE COURSE

 After dBASE Code for this item:
 -------------------------------
    USE FACULTY
---------------------------------------------------------------
```

```
Batch Action: 2
 Prompt: Copy Course.* A:
 Action: Run Dos Program - COPY Course.* A:
---------------------------------------------------------------

Batch Action: 3
 Prompt: Copy Thesis.* A:
 Action: Run Dos Program - COPY Thesis.* A:
---------------------------------------------------------------

Batch Action: 4
 Prompt: Copy Research.* A:
 Action: Run Dos Program - COPY Research.* A:
---------------------------------------------------------------


Batch Action: 5
 Prompt: Copy Service.* A:
 Action: Run Dos Program - COPY Service.* A:
---------------------------------------------------------------
```

End of Application Documentation

APPENDIX E: USER'S GUIDE

TO THE ADMINISTRATIVE SCIENCE DEPARTMENT'S

FACULTY WORKLOAD DATABASE SYSTEM

A. INTRODUCTION

The purpose of this user's manual is to familiarize the
user with the AS Department's Faculty Workload Database
System (FWDS), as well as to provide some background
information which may be useful to more experienced personal
computer users. The system is menu driven and access to the
various databases, functions and reports is gained by
selecting the desired action item from pull-down menus.

The system does require some knowledge with regard to
specific requirements at various entry points. To make the
system as easy as possible, these requirements are treated
by the application as "multiple choice" entries in formatted
data entry screens whenever possible. In other words, the
program will allow only select entries by the users.
Additionally, there are built-in validation procedures to
put limitations on data entry format in order to maintain
database continuity. Concerning data entry, dBase IV
discriminates between upper and lowercase entries of the
same data (ie. last or first names) and treats each as a
separate item. For users not familiar with dBase IV this

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data handling technique is a key consideration. These topics
are addressed in this manual where appropriate. Finally,
sample program "screens" are presented to aid in
familiarization.

B. APPLICATION START-UP

Before running FWDS, the dBase IV program must be
installed on the hard drive of the computer system to be
utilized. The FWDS application files must be loaded in a
subdirectory of the dBase IV directory. This user's guide
assumes that the dBase IV program is installed in C:\DBASE
and the application files are located in the subdirectory
named "Faculty," i.e., C:\DBASE\FACULTY. The startup batch
file, FACMGR.BAT must be loaded in the system root
directory, i.e. C:\ or in a subdirectory specified in the
AUTOEXEC.BAT search path. A minimum of eight Megabytes of
available hard disk storage space is recommended to run
FWDS. As the historical data accumulates through use of the
application, more disk space will be required.

To initiate the application type "FACMGR" at the DOS
prompt."FACMGR" is a batch file to activate the "faculty
manager" application program. The "Welcome Screen" (Figure
E.1) will appear as the application begins running. Figure
E.2 provides the contents of the FACMGR.BAT start-up batch
file.

```
    ======= FACULTY WORKLOAD MANAGER =======

              A dBASE IV Application

              By  LCDR Bob Zellmann

                      1992
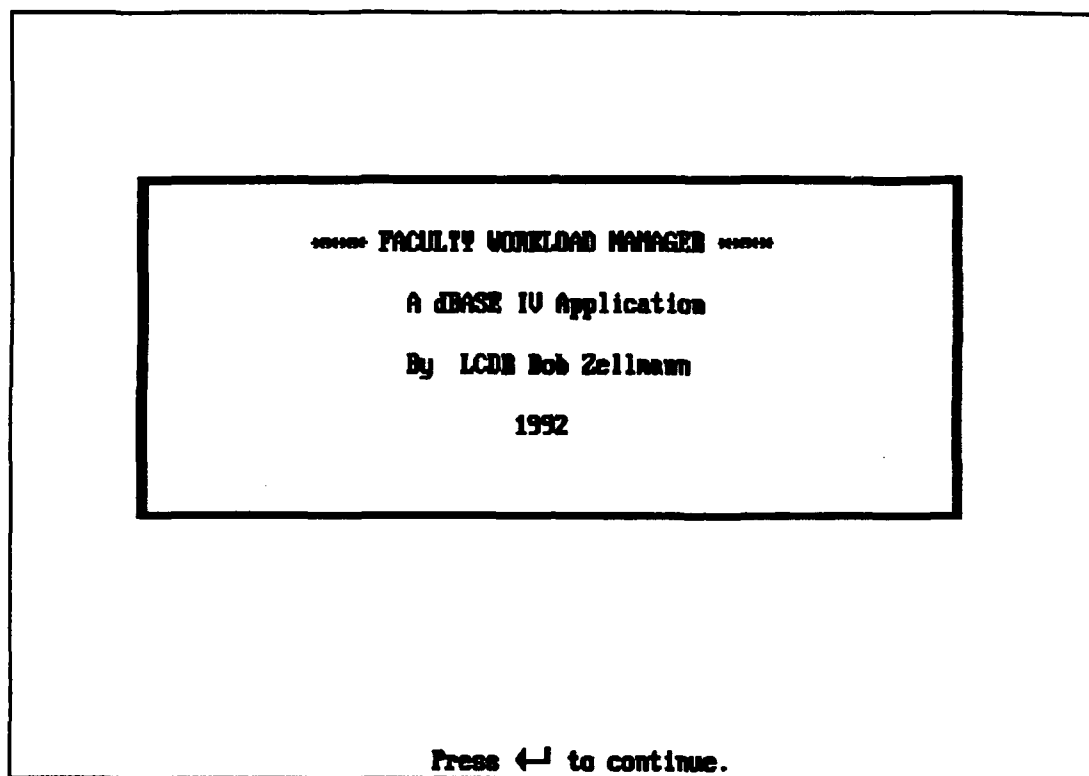



                  Press ←┘ to continue.
```

Figure E.1

An alternate method to start the application, for
experienced dBase IV users, is from the dBase Control
Center. This is done by highlighting the application name
"FACMGR" under the Application column, pressing enter and
following the screen prompts.

One final method to start the application program is
from the dBase "dot prompt". This is done by setting the
directory to FACULTY and typing "DO FACMGR" and pressing the
enter key.

```
                    FACMGR.BAT

ECHO OFF
PATH = C:\DBASE
CD C:\DBASE\FACULTY
DBASE FACMGR

NOTE:  THE dBASE IV PROGRAM FILES ARE STORED IN THE
"DBASE"  SUBDIRECTORY.  THE FWDS FILES ARE STORED
IN THE "FACULTY" SUBDIRECTORY. THE "DBASE FACMGR"
COMMAND EXECUTES BOTH THE DBASE PROGRAM AND THE
APPLICATION.
```

Figure E.2   Startup Batch Process

C.   MENUS

Each primary function of the application, i.e. Data
Entry, Data Modification, Report Generation, etc, is
displayed across the top of the screen when in the main
menu. Through the pull-down menus all operations of the
system, from adding data to generating a report, are
accessible. When the main menu is displayed, the cursor
automatically selects the first item, Add/Browse Data,
(Figure E.3). Other main menu items can be selected by
pressing the LEFT or RIGHT arrow keys and the desired action
modules in each pull-down menu can be selected by pressing
the UP or DOWN arrow keys. When the desired action or module
is highlighted, pressing the enter key will cause it to
activate. Table E.1 is a summary of the keys used to
navigate among the pull-down menus.

Table E.1   Keys Used to Navigate Pull-Down Menus.

- **Left** arrow key moves to the module option
  to the left.
- **Right** arrow key moves to the module option
  to the right.
- **Down** arrow moves down to the next available
  menu option on the current pull-down menu.
- **Up** arrow moves up to the next available
  menu option on the current pull-down menu.
- **PgDn** moves to the last available option on
  the current pull-down menu.
- **End** same as PgDn.
- **PgUp** moves to the first available option on
  the current pull-down menu.
- **Home** same as PgUp.
- **Enter** selects the currently highlighted
  option.
- First letter of any option selects that
  option.
- **Esc** exits the system or backs up to the
  previously selected menu.

As previously mentioned, access to each action module is accomplished through the corresponding main menu. Specific operations include adding, editing, and deleting data, report generation and application and database maintenance, (i.e. setting the system date and copying the databases to disk, etc.). Data entry and editing commands are the same for each module. For example, selecting the "Add Faculty Member" action will call up a formatted data entry screen for imputing faculty information while selecting the "Add Course Data" action will call up another screen for imputing course information.

The data entry process, keying in the data, is the same for all of the entry/editing screens.

```
┌──────────────────────────────────────────────────────────────────┐
│  Add/Browse Data    Modify Data    Reports    Utilities    Exit    │
├────────────────────────┐                                           │
│  Add NEW Faculty Data  │                                           │
│  Browse ALL Faculty Data                                           │
│                                                                     │
│  Add NEW Course Data                                                │
│  Browse ALL Course Data                                             │
│                                                                     │
│  Add NEW Thesis Data                                                │
│  Browse ALL Thesis Data                                             │
│                                                                     │
│  Add a NEW Research Project                                         │
│  Browse ALL Research Work                                           │
│                                                                     │
│  Add NEW Service Data                                               │
│  Browse Service Data                                                │
└────────────────────────┘                                           │

           Position: ↔↕  Select: ↵  Help: F1
```

Figure E.3   Main Menu

There are a series of "user data entry aids" within the
FWDS to help maintain database integrity. The first of these
aids is the ability of the system to "force" an input to
conform to the established format of the data field.   For
example, this process will force an uppercase letter for the
beginning of the last and first names, course numbers,
office numbers, course titles, etc. The system will also
only accept numerical entries where appropriate (i.e. phone
numbers).   The second user aid is the FWDS "multiple choice"
fields mentioned earlier. This allows the input of only
predetermined entries and ensures record conformity to the

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required format of the database. Again, the goal of these methods is not to restrict the user, but to reduce the entry of inadvertent data which would cause later problems.

The following sections will discuss each of the FWDS modules and highlight specific data entry/editing considerations or processes.

1. The Add/Browse Data Module

The Add/Browse Data module is used for management of the various databases within the system. With this module new data is entered into the Faculty, Course, Thesis, Research, and Service databases. Additionally, the module offers the capability to "browse" or view the entire contents of a selected database. This feature allows for a quick view of the data in an abbreviated format, but does not allow for any of the data to be edited. Modification of the information within the databases must be done via the "Modify Data" Module.

a. Add New Faculty Data

To add new faculty membersto the system, select "Add New Faculty Data" from the Add/Browse Data menu. Making this selection will display a formatted data entry screen (Figure E.4). Keyboard commands for data entry are listed in Table E.2.

The use of upper and lowercase letter entries for the last and first name of a faculty member should be

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Table E.2 Navigation and Editing keys for Data Entry/Editing Screens.

- **Enter** key in the first data field without entering data will result in the return to the Main menu without saving the record.
- **Enter** key after data is entered completes entry and moves to next field.
- **Down** arrow key moves cursor down.
- **Up** arrow key moves cursor up.
- **Right** arrow key moves cursor right one character.
- **Left** arrow key moves cursor left one character.
- **PgDn** key moves down one record on edit screen.
- **PgUp** key moves up one record on edit screen.
- **Del** key deletes character over cursor.
- **Backspace** key moves left one character, erasing along the way.
- **Ctrl-End** keys pressed simultaneously saves the new record or editing changes.
- **Ctrl-Y** keys pressed simultaneously deletes all characters to right of cursor.
- **Ctrl-U** keys pressed simultaneously marks record for deletion.
- **Ins** key switches between Insert and Overwrite modes.
- **Home** key moves to first character in current field.
- **End** key moves to last character in current field.
- **Tab** key moves to next field.
- **Shift-Tab** keys pressed simultaneously moves to previous field.
- **Esc** key leaves current record without saving record or editing changes.

noted by the user. It is recommended that a combination of upper and lowercase lettering be utilized as convention rather than all uppercase. The various fields for data entry will accept entries to the length of the shadowed area beside the field name. The "Title" and "Discipline" fields are restricted by multiple choice entries as discussed above. Pressing F1 calls the "Help" function for this screen which also discusses data entry requirements.

Figure E.4   Add New Faculty Data Screen.

> ### b.   *Browse All Faculty Data*

Selection of this action will allow the viewing of the entire faculty member database in an abbreviated format. The screen will be a "Read Only" screen and no data entry or modification is possible.

> ### c.   *Add New Course Data*

To add new course data, select the "Add New Course Data" from the Add/Browse Data menu. Making this selection will display a formatted screen for entering course information by section. Each course section is

required to be entered to track enrollment, instructor, and SOF data. The convention adopted for tracking when a course is conducted is the standard method in use at NPS. To enter the quarter taught information for a course use the format YYQQ. For example the fourth quarter of academic year 1992 is 92Q4. Credit received by a faculty member for teaching the course section is entered using a decimal point. Additional information for course data entry is available by pressing F1 for the help menu.

d. Browse All Course Data

Selection of this action will display a "read only" listing of all course data in an abbreviated format. This feature is useful for quick reviews of historical course information.

e. Add New Thesis Data

To enter new thesis data select "Add New Thesis Data" from the Add/Browse Data menu. A data entry screen will appear to receive the inputs. Data entry and movement among the fields is controlled as discussed earlier. The convention used to enter the "role" of a faculty member with regard to a specific thesis encompasses two systems. The system previously used by the AS department allotted different points for thesis work than the current system. The allowable entries for the "Role" field and their associated point are as follows:

Figure E.5 Help menu for New Thesis Data Entry Screen.

TP-OLD   Primary Thesis Advisor-Old System, Credit = 1.5

TC-OLD   Thesis Co-Advisor-Old System, Credit = 1.0

TA-OLD   Thesis Associate-Old System, Credit = .50

TA-   Primary Thesis Advisor-New System, Credit = 1.0

TC-   Thesis Co-Advisor-New System, Credit = .75

TA-   Thesis Associate-New System, Credit = .50

"Student Name(1)" is used for entry of the last name of the

thesis student. Use "Student Name(2)" if a second student

is assigned to the thesis. Curriculum number of the

students involved with the thesis is entered in the

"Curriculum Number" field using a three digit code from the

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NPS Course Catalog. Start and Graduation dates of the
thesis students is entered in to the corresponding "Start
Date" and "Grad Date" fields using the MMDDYY format.
Online help for data entry is available by pressing the F1
key. (See Figure E.5)

f. *Browse All Thesis Data*

Selection of this action presents a full listing
of the Thesis database in an abbreviated format. Again no
data entry or modification is available when in a browse
screen.

g. *Add New Research Project*

To add new research project information, select
"Add New Research Project" from the Add/Browse Data menu.
Making this selection will display a data entry screen for
research information. Keyboard commands for data entry are
the same as those listed in Table E.2. Enter the time frame
of the research project using the format YYMMM-YYMMM. The
sponsor of the research project will be "forced" into
uppercase letters to assist in maintaining database
continuity. The Job Order Number (JON) is a five digit
combination of letters and numbers assigned by the
Comptroller and used by the AS department to track
accounting data associated with the project. Funding amount
for the research is entered in thousands of dollars to the
nearest hundred using a decimal point. For example $23,700

would be entered as "23.7". The Paid days for the project

refers to the number of direct labor days and are also

entered using a decimal point. Output associated with the

research is entered as either an article, a paper, or a

technical report, and the corresponding number is entered.

Help for data entry is available via the F1 key.

h. *Browse All Research Work*

Selection of this action will display all of the

information in the research database in an abbreviated

format. Once again, this display is a "read only" screen.

ReadOnly

L_NAME	F_NAME	PROJ_NAME	TIME_FRAME	SPONSOR
Bhargava	Hemant	Model Const in Math Model	98OCT-91SEP	MPS
Bhargava	Hemant	Combat Modeling	91OCT-92SEP	MTMC
Bhargava	Hemant	Models Fleet Mix Planning	92JAN-92AUG	MSCG ACA
Boger	Dan	Methods Estimating Cost	98OCT-91SEP	NAVAIR
Bui	Tung	IFSM Expert Sys Enhance	91OCT-92SEP	DPAE
Bui	Tung	SEAS Prototype Verificat	91OCT-92SEP	TRADOC A
Bui	Tung	Case Studies DOD MIS	91OCT-92APR	DID OASD
Bui	Tung	IFC Expert System	98OCT-91SEP	NFC
Bolk	Daniel	Rev of Telecommunications	98OCT-	DCA
Liao	Shu	Methods Estimating Cost	98OCT-91SEP	NAVAIR
McMasters	Alan	Cost Effect of CIP	98OCT-91SEP	NAVAIR
McMasters	Alan	Resystemization Modelling	98OCT-91SEP	NPMSD
McMasters	Alan	Cost/Effect Acft Engine	91OCT-92SEP	NAVAIRSY
Mehay	Stephen	MPS Research for OP-01	85OCT-91SEP	CNO
Mehay	Stephen	AS Research for OP-01	91OCT-92SEP	CNO, PER
Mehay	Stephen	AS Research for OP-01	98OCT-91SEP	CNO
Mehay	Stephen	Army Reserve Migration	85SEP-91SEP	USAMC-FT
Mehay	Stephen	Recruiting in 21 Century	85OCT-	USAMC-FT

Figure E.6   Browse Screen for the Research Database.

(See Figure E.6).

i.   Add New Service Data

To add new faculty service data, select "Add New Service Data" from the Add/Browse Data menu. A service data entry screen will be displayed to receive the inputs. The "Category" field for the type of service is an open field, meaning no fixed "multiple choice" is presented for data entry. At present the following categories have been entered into the database as data entry examples: AA-Academic Advisor, Assoc Chair-Associate Chairman, and CC-

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Course Coordinator. The period of the service assignment is entered using the YYMMM-YYMMM format. Credit for the service assignment is entered using a single digit. Additional data entry information is available from the help menu associated with the service data entry screen.

j. *Browse All Service Data*

Selection of this menu provides a display of all the information in the service database using an abbreviated format. This display is a "read only" screen and cannot be used for data entry.

2. The Modify Data Module

The Modify Data module is used for management of the FWDS databases. Within this module the records established with the Add/Browse Data module may be changed or deleted.

a. *Modify Data Menu*

All of the databases within the FWDS are each accessed through selection of the appropriate action from the Modify Data menu (See Figure E.7). Each database uses a separate update screen for each record. A key feature provided in the update screen is the "Quick Search Method" for finding the desired record to modify. Place the cursor in the appropriate field and select the forward or backward search action from the bar menu available via pressing the F10 key. As mentioned on the update screen, *capitalization match must be set to no, or Dbase IV will search for a non-*

Figure E.7   The Modify Data Menu.

existing entry in all uppercase.   The search string entered
must match the desired entry for a successful search.   The
data update screens for each database are similar to the
data entry screens used to originally enter the record.   (See
Figure E.8).

Figure E.8 The Update Faculty Data Screen.

b. Removing Marked Records

Deleting a record is a two-step process. First, the **Ctrl-U** command is used in the update screen to mark the record(s) for deletion. Once the record has been marked, other records can then be viewed or edited. The **Ctrl-End** key is then used when all updating is complete. This saves the deletion mark with the record. The record can be unmarked by returning to the update screen, selecting the record and using the Ctrl-U command.

The final step in deleting a record(s) is by selecting the "Purge Marked Records" option from the Modify Data menu. This will permanently remove each marked record from the databases and automatically perform any necessary data file maintenance. After selecting to purge records a

```
Looking for DELETED Records...
_____
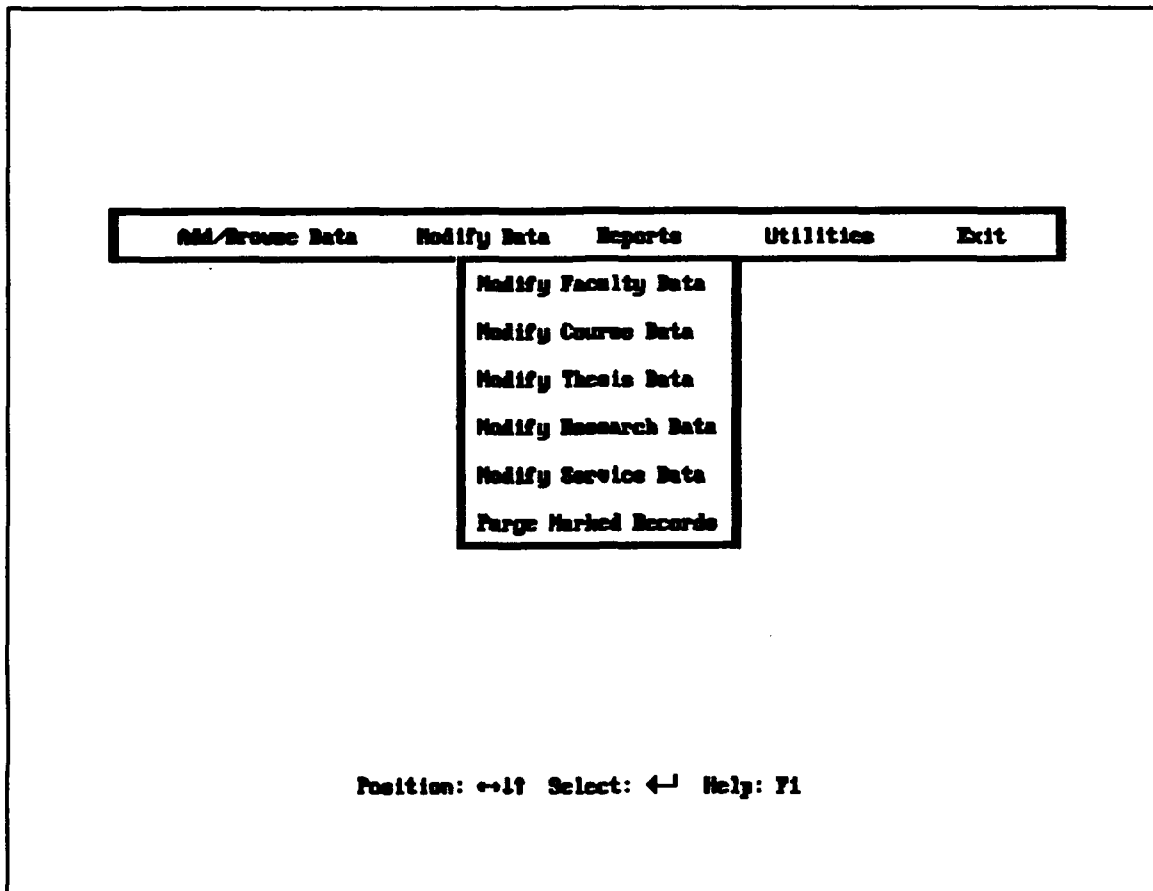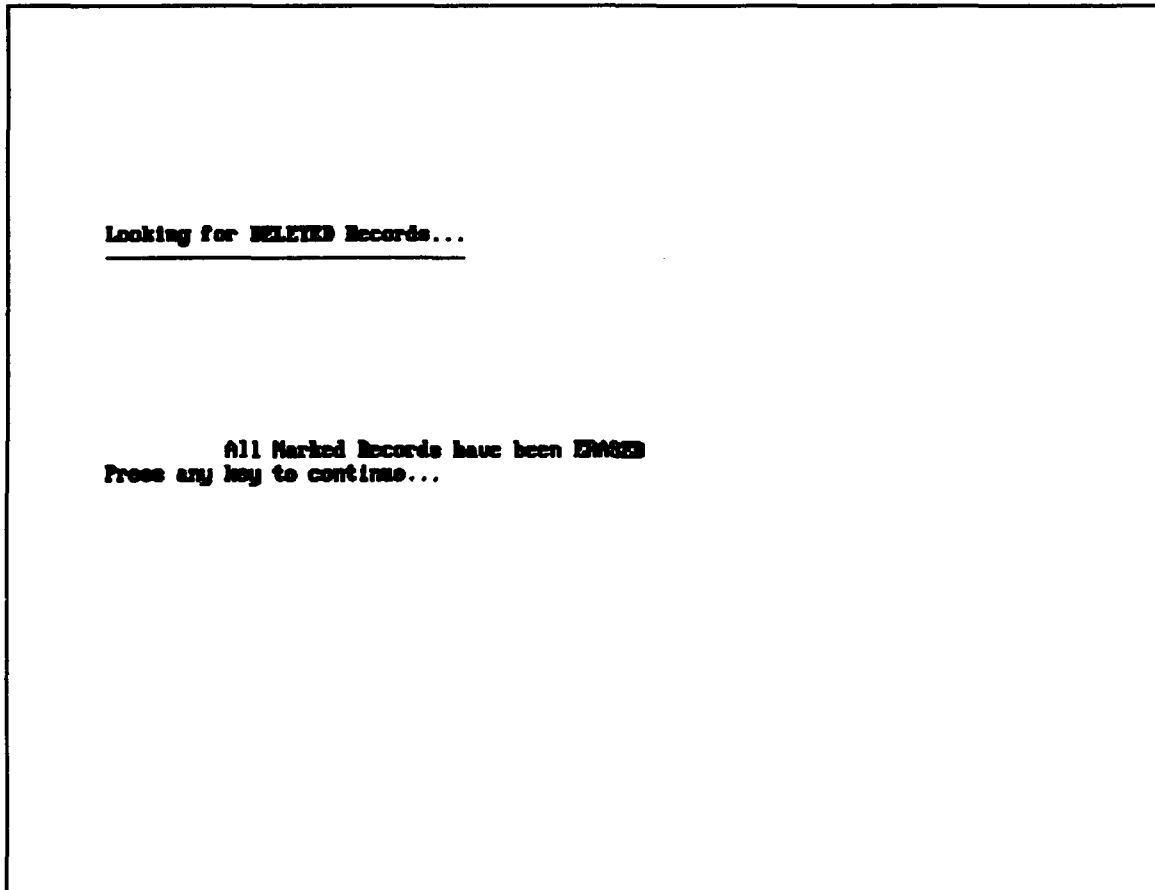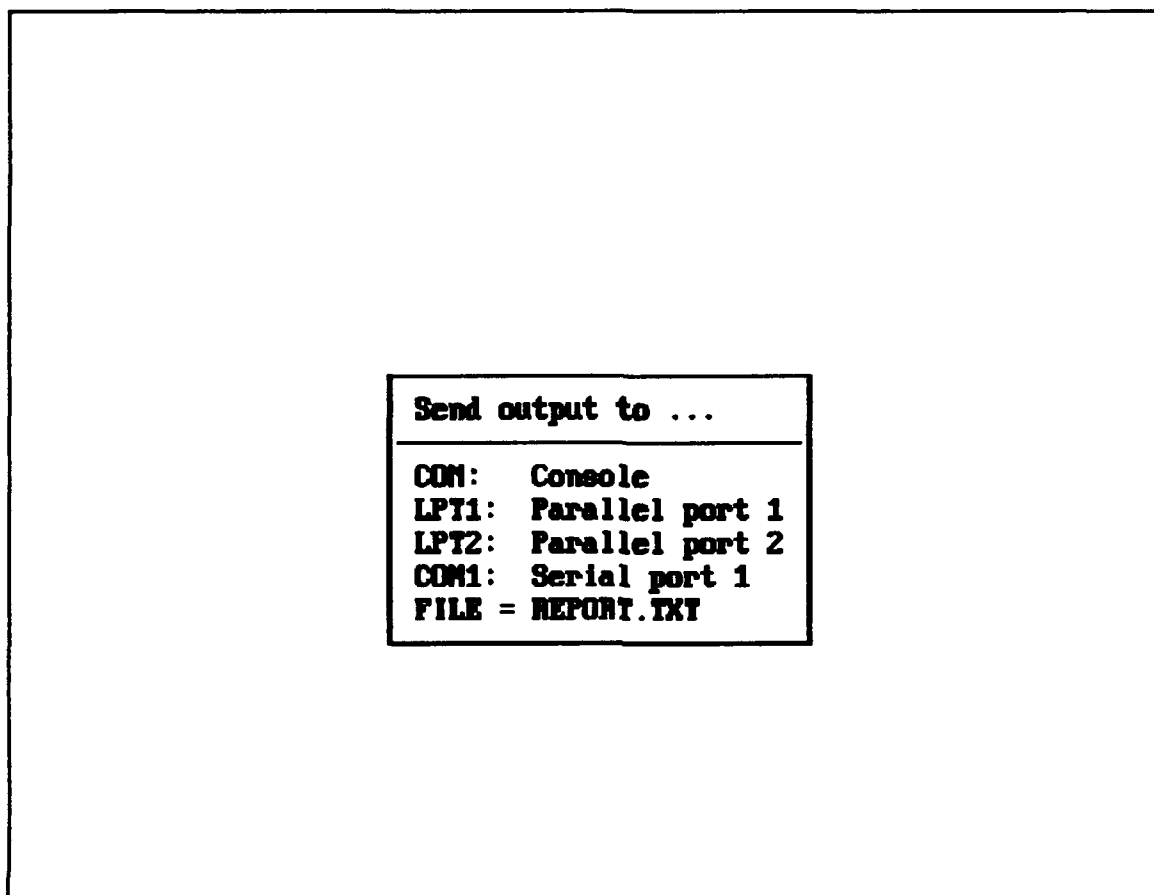



        All Marked Records have been PURGED
Press any key to continue...
```

Figure 9   Purge Completion Screen.

"purge complete" screen will be displayed. (See Figure E.9)

3. The Reports Module

The Reports module is used to compile and generate fifteen different reports associated with the five databases

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Figure E.10   Reports Menu.

within the Faculty Workload Database System.   Each report is for a specific period as stated on the highlighted action. (See Figure E.10).   Some reports require a two year period while others a three year period.   The period of the report is taken backward from the current date of the system.   The FWDS uses a hidden field within each data record called RECNUM to determine which information to include in a report.   The RECNUM for each record is assigned a date upon entry which should not be changed.   Any of the reports may be generated by highlighting the desired report and pressing

```
┌─────────────────────────────────────────────────┐
│                                                 │
│                                                 │
│                                                 │
│           ┌───────────────────────────┐         │
│           │ Send output to ...        │         │
│           ├───────────────────────────┤         │
│           │ CON:   Console            │         │
│           │ LPT1:  Parallel port 1    │         │
│           │ LPT2:  Parallel port 2    │         │
│           │ COM1:  Serial port 1      │         │
│           │ FILE = REPORT.TXT         │         │
│           └───────────────────────────┘         │
│                                                 │
│                                                 │
│                                                 │
│                                                 │
└─────────────────────────────────────────────────┘
```

Figure E.11   Report Output Destination Menu

the Enter key. Once a report starts to generate, the user

will see an output destination pop-up menu. This allows for

the report to be viewed on the screen and read using the

Pause key, or to be directed to one of two line printer

ports LPT1 and LPT2. Most hardcopy outputs will be sent to

LPT1 as the primary path to the system's printer. Also, the

user may select to forward the report to a serial port or to

an ASCII file for further editing within a word processor.

(See Figure E.11).

4. Utilities Module

The purpose of the Utilities module is to provide various file maintenance utilities needed to effectively manage the FWDS. These include database backup, copying the entire FWDS application to disk for transfer to another system, reindexing of data files and changing of the entire system date. The various Utilities options are selected from the menu displayed in Figure E.12.

a. *Change System Date*

Selecting the Change System Date option allows the user to utilize the DOS "Date" function and change the current date of the system. This option is useful for generating a report of historical data older than two or three years. The format for entering the date is DD-MM-YY. **It should be emphasized that the system date must be reset to the correct date before any new data entry.**

b. *Backup Databases to Drive A*

Selecting this option backups all database files. It requires the user to have positioned a formatted data disk in the A drive. If the A drive is not the desired drive for the data to be sent, exit from the application and use the DOS command ASSIGN to "force" the desired location to the A drive. For example if the personal computer running the FWDS has both A and B drives, and the data is desired to be sent to the B drive, the DOS command would be:

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Figure E.12   Utilities Menu

"ASSIGN A = B". For additional information on use of the
ASSIGN command see the DOS users manual.

c. Rebuild Corrupted Indexes

This selection should be run whenever there is
an unexpected loss of power as this might cause the indexes
associated with the databases to become corrupted. This
will cause the system to fail and display an error message
specifying a problem with an index. Following completion of

the index rebuild the system will display a completion
screen.

d. *Copy Application to Drive A*

To easily copy the entire FWDS application files
and associated databases select this option. The files will
be copied to the A drive similar to the procedure discussed
above in the Copy Databases section. A high density data
disk will be required to ensure all of the system files and
data files fit on the disk. Place a formatted disk in drive
A and press the Enter key.

5. **The Exit Module**

Selecting "Quit to DOS" from the Exit menu will
leave the system and return the user to the DOS prompt.
This is the recommended method for leaving the system as
this action properly closes the FWDS databases and files.

Selecting "Quit to dBase IV" from the Exit menu will
place the user in the dBase IV Control Center in the Faculty
Subdirectory within the main dBase directory. Experienced
dBase IV users can directly manipulate the data and system
files without the FWDS application running. Extreme care
should be exercised if this option is selected. Within the
dBase IV Control Center it is easy to inadvertently delete
or modify a system file and cause the entire FWDS to fail to
operate.

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